

WAFWA CLIMATE CHANGE COMMITTEE

Annual Update of Climate Activities by State 2012

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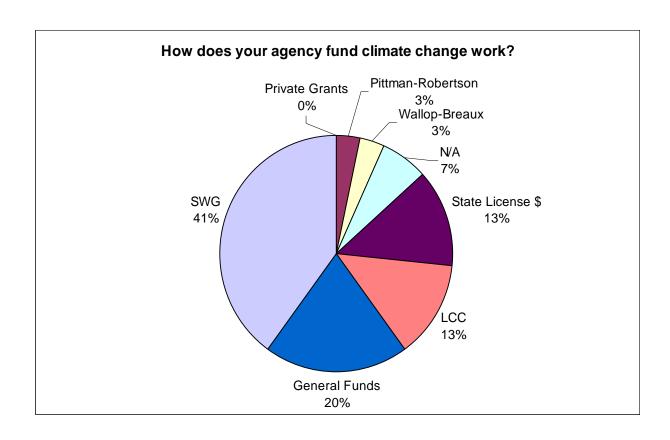
Survey Approach

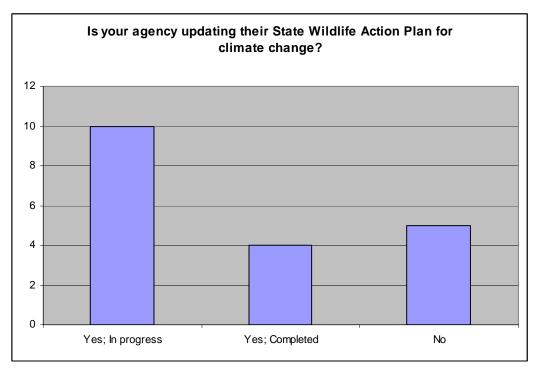
The WAFWA Climate Change Committee is WAFWA's principal forum for discussion, gathering information and/or identifying actions relative to all aspects of climate change as it relates to fish and wildlife. WAFWA states, provinces, and partners have been participating in this annual survey every year since 2009. The annual survey has proven to be useful as a communication tool among states and partners, saves time in the committee to focus on action items, and provides a resource for those that are unable to attend the committee meeting.

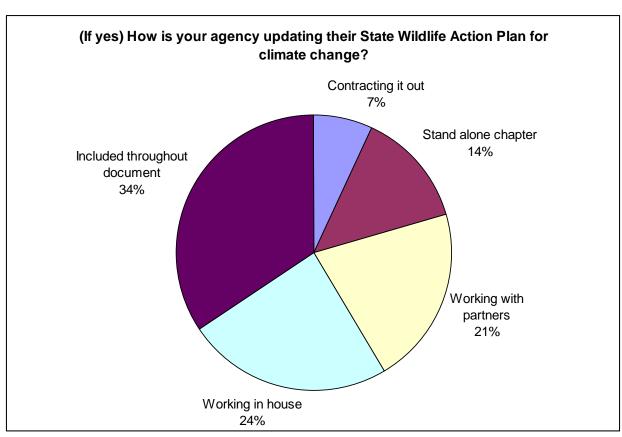
For the past two years WAFWA has been collaborating with AFWA to conduct a nation wide survey of state agencies' activities related to climate change. There are many benefits to having both a regional and national snapshot of climate activities at the state level. For example, out of all of the state fish and wildlife agencies in the country only 11 have positions that are solely dedicated to climate change mitigation or adaptation, four of which are in WAFWA states (AZ, CA, CO, WA). Regardless, state fish and wildlife agencies are taking many steps towards minimizing the negative effects of climate change on fish, wildlife, and habitats across the country. While their activities may vary, many agencies are pursuing a variety of actions that are detailed yearly in this report making this document an important communication tool. This report contains an excerpt of the responses representing WAFWA member states and partners however; the AFWA Climate Committee will be releasing the result of the survey in its entirety in the fall of 2012.

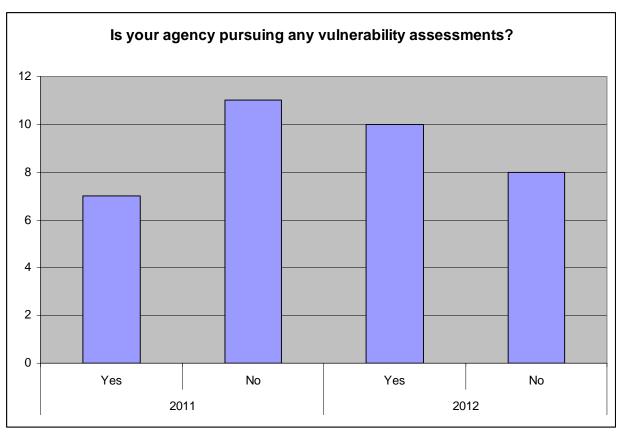
State Fish & Wildlife Agencies' Climate Activities: Summary of Key Findings

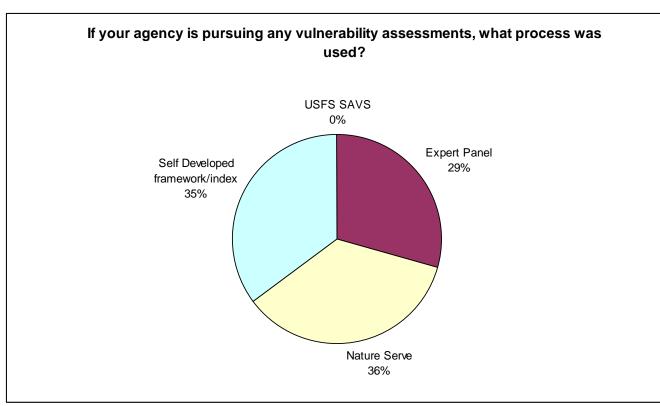
The following graphs represent a sampling of the responses detailed in the WAFWA states' response to the survey. In addition **Appendix III** details science and research needs by state and **Appendix IV** identifies additional training and/or information that the WAFWA climate committee might provide that would be helpful for state fish and wildlife agency efforts related to climate change.

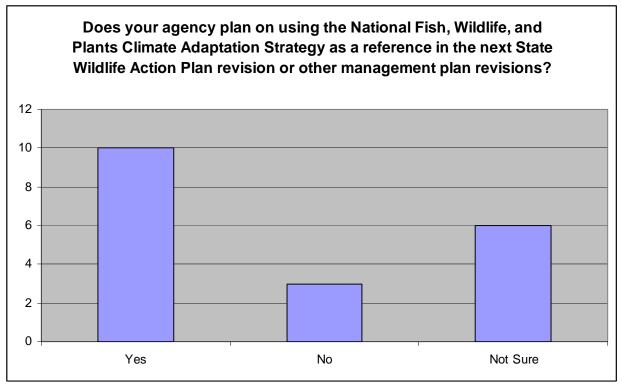


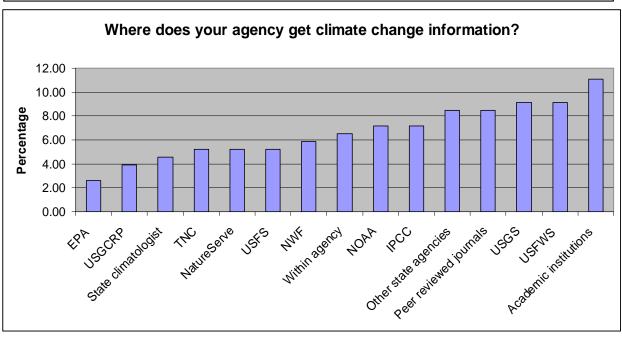


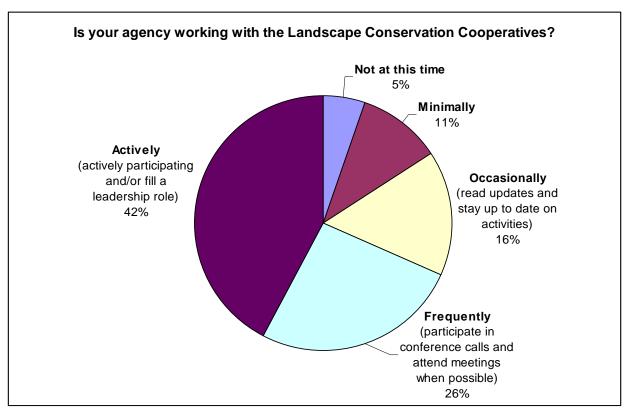


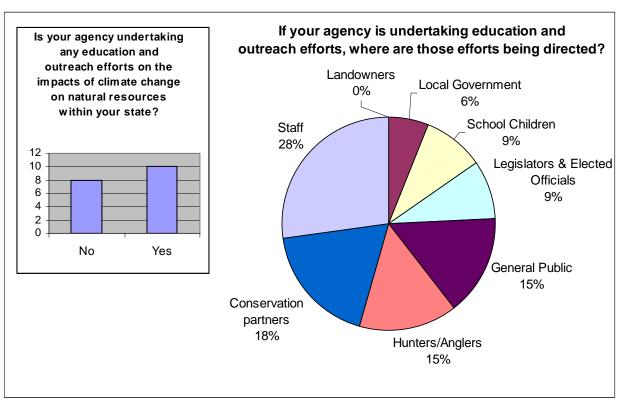


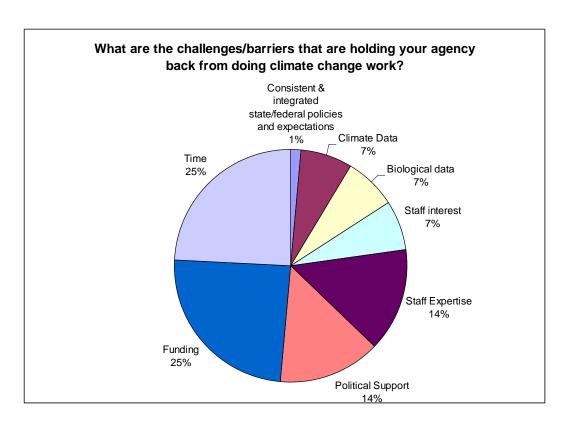




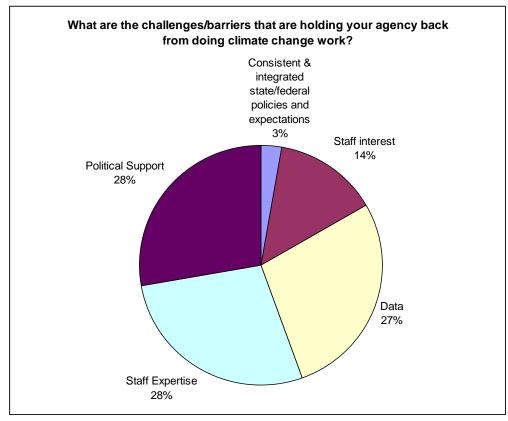








If we omit funding and time constraints the results show that political support, staff expertise and data are the primary barriers to action.



WAFWA Science & Research Needs for Climate Change

- Better baseline data in Alaska to downscale models and test assumptions
- Vulnerability assessments, water temperatures, impacts on reproduction cycles, fire regimes, invasive species.
- Research Assessing and quantifying the short-term and long-term implications of forest
 health issues (i.e., mountain pine beetle infestation, spruce beetle infestation, sudden
 aspen decline, etc.) on fish and wildlife and their habitats. This needs to be done for
 priority sport fish, game species, species of greatest conservation need, and charismatic
 watch able wildlife species.
- Develop a set of projections for how climate is likely to change in Colorado by major climate regions and elevation zones of the state. Along with these projections, develop a set of plausible scenarios that cover the range of possible outcomes that may also be used to address uncertainty associated with the projected changes in climate.
- Complete a "climate turnover analysis" that encompasses the varied topography of
 Colorado to quantify the magnitude of change in climate variables for future climate
 projections. This analysis will help to ascertain geographic and/or elevation zones that are
 likely to experience significant change, moderate change, and little or no change in
 climate variables. This analysis will aid in targeting areas of possible refugia, areas for
 future land acquisition, areas of possible management intervention and adaptation
 strategies, and areas where management intervention and adaptation strategies may not be
 effective.
- Assessment of the relative vulnerability of priority ecosystems (alpine tundra, subalpine forests, montane forests, pinyon-juniper woodlands, grasslands, sage-grass shrublands, desert shrublands, riparian corridors, and wetlands), wildlife movement corridors, and a suite of priority Colorado species to the anticipated effects of climate change; assessment of the relative vulnerability of priority aquatic ecosystems and their associated water rights and in-stream flows; assessment of possible changes in the distribution and abundance of priority habitats and species due to climate change; and assessment of the magnitude and extent of change (increase, loss, no change) and the magnitude and extent of fragmentation of crucial habitats and wildlife corridors due to all threats and stressors including climate change.
- Develop reliable methods and metrics for assessing and quantifying short-term and long-term drought impacts to priority ecosystems, habitats, and species.

- Development of a wildlife adaptation Decision Support System that integrates all major threats and stressors to habitats and species along with projections for future water availability in the major river basins of the State and the desired water needs for fish and wildlife to help guide and prioritize future wildlife management and land acquisition decisions.
- Develop a suitable bio-climate analysis for a suite of species of greatest conservation
 need to assess the magnitude of possible change in bio-diversity by mid-century. Link
 downscaled climate projections for Colorado with ecological response models that will
 help define possible changes in ecosystems and priority habitats due to projected changes
 in climate.
- Assessment and quantification of expected phenological changes and translation of how
 those changes may impact the annual, seasonal, and life cycle requirements of priority
 game and fish species and species of greatest conservation need; and translation of how
 those changes may impact crucial wildlife habitats (summer range, winter range,
 production areas, etc.) and wildlife movement corridors within priority ecosystems.
- Assessment of what are the critical hydrologic thresholds that will result in significant
 changes in dominant vegetation types in Colorado, such as the mountain shrub lands and
 sage-grass ecosystems of the Western Slope, i.e., what are the climatic envelopes of these
 ecosystems and which ones are most likely to experience a conversion to a different
 vegetative land cover due to a changing climate.
- Improve methods to minimize long-term impacts to coral reefs from shoreline projects (e.g., stream channels, dredging, beach replenishment, and harbor development). (1.00) Develop science-based criteria and best management practices for ecosystem-based approaches for near shore fisheries management in Hawai'i. (0.93). Understand the impacts of climate change on island carrying capacity (e.g., potable water, waste disposal, energy use and production, transportation, economics, and living space). (0.88) Assess the impacts of shoreline projects (e.g., stream channels, dredging, beach replenishment, and harbor development) on coral reef productivity. (0.85) Understand and map major impacts (e.g., sea level rise, saltwater intrusion, and weather conditions) of climate change on shorelines and infrastructure. (0.81) Relate various impacts of land use and development practices to localized degradation of environmental quality including marine ecosystems. (0.79) Understand the dynamics of, and model pollutant and nutrient loads from, point or non-point sources to receiving waters as a function of land use and development patterns. (0.74)
- IDFG research needs center around assessing the sensitivity, exposure, and adaptive capacity of species to climate change. For example, the downscaled (1km) climate models represent significant progress (as compared with the global models) yet are still

too coarse to address many local and state management needs and range of uncertainty is still high. In addition, the lack of basic natural history information for many species and their habitats is a hindrance. It is often not clear how species will react to particular temperature and/or precipitation changes, if thresholds occur beyond which the populations may decline, and if the current relationships between species and their habitats will persist. Given these uncertainties, experience and knowledge on addressing and planning for the 'unknown', such as implementation of adaptive management and structured decision making, would be helpful. Continue to need information on the efficacy of management actions for species and habitats in the face of climate change.

- Current distribution of species under current climate conditions coupled with mobility of species and assessment of fragmentation/"hostile environment" distances between suitable habitat
- Scaled down models that better predict impacts of climate change on different ecotypes. Monitoring of predicted impacts to determine model accuracy
- Monitor species and system response to CC, conduct vulnerability assessments for natural communities, landscape connectivity modeling
- Connectivity, response of wildlife to changing habitats, monitoring species and habitats changes
- Effects of climate change on species and habitats statewide.
- Short-term as well as long-term on the ground management related research on hydrology, changes in vegetative communities, local scale precipitation changes
- Need access to future climate informed data, specific to watershed, for sizing culvert replacement.
- Climate change effects on wildlife diseases and invasive species distributions.

Additional Training/Information Needs for WAFWA Committee Consideration

- Model testing and verification.
- Examples of solid integration of climate change data into wildlife related management plans.
- Internal and external Climate Change Outreach, Messaging, and Communication strategies.
- Projecting and quantifying loss or gain in quality and extent of suitable habitat.
- Methods and techniques for projecting and quantifying fragmentation of crucial habitats and wildlife corridors.
- Methods for enhancing connectivity of aquatic and/or terrestrial habitats and corridors.
- Methods for assessing and quantifying both short-term and long-term drought impacts to ecosystems, habitats, populations, and species.
- Listing and prioritizing regional climate change concerns where there is commonality among several or more western states regarding concerns for habitat, species, connectivity, climate science, scenario planning, future climate projections, bio-climate modeling, funding for climate adaptation planning, funding for climate adaptation on-the-ground projects, multi-state collaborations for climate and wildlife research, or other. (Regional concerns may be framed as Northern Rockies, Southern Rockies, or Great Plains concerns).
- Examples of those states that are actively addressing climate change.
- Analysis and interpretation of climate change models.
- Practical guide, with real world examples, of effective actions that land managers can take to address climate change impacts. The NFWPCAS has lots of mid to high elevation policy recommendations but what is needed is more guidance for on-the-ground work.
- More detailed/specific information for species and regions.
- Climate change vulnerability assessment training.
- Incorporating climate change scenarios in planning.

Spotlight on Partners

Wildlife Conservation Society-North America Program

1. What agency or organization do you work for? What is your title?

Wildlife Conservation Society

Climate Change Adaptation Coordinator for our North America Program

2. Do you have a program or position(s) in your organization that is solely dedicated to climate change?

Yes

3. Please provide an estimate of the cost of your agency/organizations climate change related activities over the past year, how many FTEs are dedicated to this work, and how is it funded.

WCS North America Program's climate change budget is over \$400,000, and we run a ~\$4 million re-grant program on climate change adaptation. There are approximately 6-7 FTEs working on climate change in the North America Program. We are funded via grants from private foundations, government agencies, and private donors.

4. Is your agency/organization pursuing a vulnerability assessment(s)? Underway

5. If the answer is yes, what process did you use?

Nature Serve VI

Self-Developed Framework or Index

Other

6. Is your agency pursuing more than one type of vulnerability assessment?

Yes

We have used tools such as the NatureServe CCVI, but also use a variety of other techniques to assess vulnerabilities and conduct adaptation planning, especially the Adaptation for Conservation Targets (ACT) Framework (developed by a WCS-led working group).

7. Is climate change being integrated into other programs and projects throughout your agency/organization?

Yes

Climate change is a major issue for WCS and we are integrating climate change into all of our landscape and species conservation efforts.

8. What are the science gaps that still need to be addressed for climate planning in your agency/organization?

We are constantly assessing and trying to fill science needs for specific projects, species, landscapes, etc.

9. Is your agency/organization working across sectors (transportation, energy, agriculture, etc) within your state/region on climate change or climate-related issues?

No

We are primarily focused on natural resource (including species and land) conservation and management

10. Is your agency trying to educate the public, partners, or staff on the impacts of climate change on natural resources within your state/region? Select all that apply? Partners

11. Is your agency involved in collaborative climate change projects with a state fish and wildlife agency? Other partners?

Yes

We have been consulting with Montana to help them think about integrating climate change into their State Wildlife Action Plan. We are leading climate change adaptation planning efforts with a number of state and federal agencies across multiple landscapes in the US.

12. What are your agency/organization's plans/ next steps for this year as it relates to climate adaptation?

We continue to work on: 1) Understanding the consequences of climate change for fish, wildlife and ecosystems; 2) Providing tools and leading collaborative adaptation planning to help managers determine adaptation options for dealing with the consequences of climate change; 3) Working with partners to implement priority adaptation actions.

- 13. What are the challenges/barriers that are holding your agency back from making more progress on climate adaptation work? Select all that apply.

 No Response
- 14. Are there any specific topics or opportunities that you would like to bring up for discussion among your colleagues and leadership at the WAFWA Climate Change Committee or the AFWA Climate Change Committee?

 No Response

15. Are there any additional highlights, accomplishments, new initiatives, or actions that you would like to share?

We have a number of climate change adaptation reports and papers describing the Adaptation for Conservation Targets (ACT) framework for adaptation planning, and efforts by managers and scientists to apply that tool and plan for specific species and ecosystems across the U.S. We would be happy to provide links to these reports as desired.

U.S. Fish and Wildlife Service, Pacific Southwest Region

1. What agency or organization do you work for? What is your title?

U.S. Fish and Wildlife Service, Pacific Southwest Region; Assistant Regional Director - Science Application

2. Do you have a program or position(s) in your organization that is solely dedicated to climate change?

No

3. Please provide an estimate of the cost of your agency/organizations climate change related activities over the past year, how many FTEs are dedicated to this work, and how is it funded.

Region wide: \$2.4M; 5 FTE; Funding: DOI appropriations

4. Is your agency/organization pursuing a vulnerability assessment(s)?

Underway

5. If the answer is yes, what process did you use?

Nature Serve VI Expert Panel

6. Is your agency pursuing more than one type of vulnerability assessment?

Yes

Species V.A. Habitat V.A.

7. Is climate change being integrated into other programs and projects throughout your agency/organization?

Yes

ESA; Refuge management; migratory bird management; fisheries management; habitat restoration

8. What are the science gaps that still need to be addressed for climate planning in your agency/organization?

projected changes in species distribution, community structure/composition, demographic rates for species of conservation concern, hydrologic regimes, fire regimes, invasive species, etc.

9. Is your agency/organization working across sectors (transportation, energy, agriculture, etc) within your state/region on climate change or climate-related issues?

Yes

Transportation, energy, and agriculture interests are active members of the Great Basin LCC and help to identify science priorities.

10. Is your agency trying to educate the public, partners, or staff on the impacts of climate change on natural resources within your state/region? Select all that apply?

Public

Partners

Staff

11. Is your agency involved in collaborative climate change projects with a state fish and wildlife agency? Other partners?

Yes

California Department of Fish and Game - native plant VAs, habitat connectivity projects, SLR studies (with USGS and Coastal Conservancy), downscaled climate modeling, migratory bird studies (with PRBO), etc.

12. What are your agency/organization's plans/ next steps for this year as it relates to climate adaptation?

Continue collaboration with partners on addressing SLR in SF Bay; address climate adaptation in Refuge management and habitat restoration plans; support CDFG update to SWAP.

13. What are the challenges/barriers that are holding your agency back from making more progress on climate adaptation work? Select all that apply.

Lack of biological data Lack of funding Lack of staff expertise

14. Are there any specific topics or opportunities that you would like to bring up for discussion among your colleagues and leadership at the WAFWA Climate Change Committee?

Potential for more joint State-Fed projects that demonstrate climate adaptation in practice (see South Bay Salt Pond Restoration Project at http://l.usa.gov/xFmpw4)

15. Are there any additional highlights, accomplishments, new initiatives, or actions that you would like to share?

No Response

Washington Fish and Wildlife Commission

1. What agency or organization do you work for? What is your title? Serve on WA Fish and Wildlife Commission

2. Do you have a program or position(s) in your organization that is solely dedicated to climate change?

No

3. Please provide an estimate of the cost of your agency/organizations climate change related activities over the past year, how many FTEs are dedicated to this work, and how is it funded

None on the Commission, WA Dept. of Fish and Wildlife has an active, funded program.

- **4.** Is your agency/organization pursuing a vulnerability assessment(s)? Underway
- **5.** If the answer is yes, what process did you use? Choose all that apply. Self-Developed Framework or Index
- 6. Is your agency pursuing more than one type of vulnerability assessment?

Yes

specifics of Dept. program not known

7. Is climate change being integrated into other programs and projects throughout your agency/organization?

Yes

specifics of Sept. program unknown

8. What are the science gaps that still need to be addressed for climate planning in your agency/organization?

unknown

- 9. Is your agency/organization working across sectors (transportation, energy, agriculture, etc) within your state/region on climate change or climate-related issues? unknown, but they participate with other groups on state-wide effort
- 10. Is your agency trying to educate the public, partners, or staff on the impacts of climate change on natural resources within your state/region? Select all that apply?

Public

Partners

Staff

11. Is your agency involved in collaborative climate change projects with a state fish and wildlife agency? Other partners?

Yes

unknown

12. What are your agency/organization's plans/ next steps for this year as it relates to climate adaptation?

more planning, collaboration and vulnerability assessment

13. What are the challenges/barriers that are holding your agency back from making more progress on climate adaptation work? Select all that apply.

Lack of funding

Lack of staff expertise

14. Are there any specific topics or opportunities that you would like to bring up for discussion among your colleagues and leadership at the WAFWA Climate Change Committee or the AFWA Climate Change Committee?

Lack of ability to affect changes in habitat conditions that may take place as climate changes

15. Are there any additional highlights, accomplishments, new initiatives, or actions that you would like to share?

unknown

Appendix I: WAFWA Climate Change Contacts 2012

State/Province/ Territory	Name of coordinator
Alaska	Douglas S Vincent-Lang
Alberta	Lisa Matthias
Arizona	Eric Gardner
Arizona	Bob Broscheid
Arizona	Joyce M. Francis
Arizona	Mike Senn
British Columbia	Tom Ethier
California	Amber Pairis
Colorado	Thomas A. Schreiner
Colorado	Dave Chadwick
Hawaii	Ronald Cannarella
Hawaii	Sheri S. Mann
Hawaii	Scott Fretz
Idaho	Karla Drewsen
Idaho	Sharon W. Kiefer
Kansas	Ken Brunson
Kansas	Steve Adams
Montana	Rob Brooks
Montana	Ken McDonald
Nebraska	Jeffrey Lusk
Nebraska	Scott Taylor
Nebraska	Rick Schneider
Nevada	Laura Richards
New Mexico	Matthew Wunder
New Mexico	Terra Mansco
North Dakota	Terry Steinwand
North West Territories	Jim Sparling
Nunavut	Froeydis Reinhart
Oklahoma	Matthew Mattioda

Oregon Holly Michael

Oregon Eric V. Rickerson
Saskatchewan Wayne Gosselin

South Dakota Eileen Dowd Stukel

South Dakota John Lott

South DakotaTom KirschenmannTexasWendy Connally

Utah Eric Larson

UtahMichael CanningWashingtonLynn HelbrechtWyomingMike Stone

Wyoming Glen Pauley
Yukon Karen Clyde

Appendix II: Questions Covered in the 2012 Update

- 1. What state agency do you work for? What is your title?
- 2. What regional association is your agency associated with?
- 3. Does your agency have a position that is solely dedicated to climate change (either mitigation or adaptation)?
- 4. How does your agency fund climate change work?
- 5. Is your agency updating their State Wildlife Action Plan for climate change?
- 6. If so, how is your agency updating their State Wildlife Action Plan for climate change?
- 7. Is your agency updating other management plans for climate change?
- 8. Does your agency plan on using the National Fish, Wildlife, and Plants Climate Adaptation Strategy as a reference in the next State Wildlife Action Plan revision or other management plan revisions?
- 9. Does your state have a State Climate Adaptation Plan?
- 10. Is your agency pursuing any vulnerability assessments?
- 11. If the answer is yes, what process was used?
- 12. How is your agency addressing climate change impacts and climate-related impacts on the ground (i.e. reducing stressors, restoration, land acquisition, etc.)?
- 13. Where does your agency get climate change information?
- 14. What are the science and research needs for your agency in regards to climate change work?
- 15. Is your agency working with other departments or agencies within your state on climate change or climate-related issues?
- 16. Is your agency involved in collaborative climate change projects with conservation partners (federal, state, NGO, academia, etc...)?
- 17. Is your agency working with the Landscape Conservation Cooperatives?
- 18. Is your agency undertaking any education and outreach efforts on the impacts of climate change on natural resources within your state?

- 19. What is the future direction of climate change planning/ implementation in your agency/state in the coming year?
- 20. What are the challenges/barriers that are holding your agency back from doing climate change work?
- 21. What additional training or information could the AFWA Climate Change Committee or the regional associations provide that would be helpful for your agency to incorporate climate change into agency work?
- 22. Are there any additional highlights, accomplishments, new initiatives, or actions that you would like to share (that have not been articulated yet)?

Appendix III: Detailed State Fish and Wildlife Agency Responses

Alaska

Name: Doug Vincent-Lang

State Agency: Alaska Department of Fish and Game

Contact Information: douglas.vincent-lang@alaska.gov

1. What state agency do you work for? What is your title?

Alaska

2. What regional association is your agency associated with? (Choose all that apply)

WAFWA

3. Does your agency have a position that is solely dedicated to climate change (either mitigation or adaptation)?

No

4. How does your agency fund climate change work? (Choose all that apply)

State Wildlife Grants

General Funds

5. Is your agency updating their State Wildlife Action Plan for climate change?

Completed

6. If so, how is your agency updating their State Wildlife Action Plan for climate change? (Choose all that apply)

Included throughout the document

7. Is your agency updating other management plans for climate change?

No

8. Does your agency plan on using the National Fish, Wildlife, and Plants Climate Adaptation Strategy as a reference in the next State Wildlife Action Plan revision or other management plan revisions?

Not Sure; have not read it yet/ waiting for the final version

9. Does your state have a State Climate Adaptation Plan?

Completed

10. Is your agency pursuing any vulnerability assessments?

Underway

11. If the answer is yes, what process was used? (Choose all that apply)

Self-Developed Framework or Index

12. How is your agency addressing climate change impacts and climate-related impacts on the ground (i.e. reducing stressors, restoration, land acquisition, etc.)?

No Response

13. Where does your agency get climate change information? (Choose all that apply)

- Within Your Agency
- State Climatologist
- Other State Agencies
- Academic Institutions
- Peer Reviewed Journals
- The Nature Conservancy
- National Wildlife Federation
- NatureServe
- USGS
- USFWS
- USFS
- NOAA
- EPA

14. What are the science and research needs for your agency in regards to climate change work?

We need better baseline data in Alaska to downscale models and test assumptions

15. Is your agency working with other departments or agencies within your state on climat
change or climate-related issues?

Yes

Other Resource Departments

16. Is your agency involved in collaborative climate change projects with conservation partners (federal, state, NGO, academia, etc...)?

Yes

Via the Alaska Climate Change Executive Roundtable

17. Is your agency working with the Landscape Conservation Cooperatives?

Actively (actively participating and/or fill a leadership role)

We work only with those LCCs remaining focused on climate change science (Arctic, Western, and North Pacific). We do not work with those not focused on science collaboration (Aleutian and Interior Forest LCCs)

18. Is your agency undertaking any education and outreach efforts on the impacts of climate change on natural resources within your state? (Choose all that apply)

General Public

Hunters and Anglers

School Children

Staff

Conservation Partners

19. What is the future direction of climate change planning/ implementation in your agency/state in the coming year?

So long as we remain focused on sound data collection and model verification good. If we stray into implementation of untested adaptive strategies it will be challenging.

20. What are the challenges/barriers that are holding your agency back from doing climate change work? (Choose all that apply)

Lack of Funding

Lack of Time

Lack of Staff Expertise

Lack of Climate Data

21. What additional training or information could the AFWA Climate Change Committee or the regional associations provide that would be helpful for your agency to incorporate climate change into agency work?

Model testing and verification. We place too much faith on untested or unverified models

22. Are there any additional highlights, accomplishments, new initiatives, or actions that you would like to share (that have not been articulated yet)?

No

Arizona

Name: Eric Gardner

State Agency: Arizona Game and Fish Department

Contact Information: EGardner@azgfd.gov

1. What state agency do you work for? What is your title?

Arizona Game and Fish Department

2. What regional association is your agency associated with? (Choose all that apply)

WAFWA

3. Does your agency have a position that is solely dedicated to climate change (either mitigation or adaptation)?

Yes

4. How does your agency fund climate change work? (Choose all that apply)

N/A

However, we feel that much of the traditional work we do addresses climate changes and related stressors; therefore all of the fund sources could apply.

5. Is your agency updating their State Wildlife Action Plan for climate change?

Completed

6. If so, how is your agency updating their State Wildlife Action Plan for climate change? (Choose all that apply)

Stand-alone chapter

Included throughout the document

Working with partners

7. Is your agency updating other management plans for climate change?

No

Not specifically; however we encourage planning to look at large scale adaptation issues and to include them in plans when appropriate.

8. Does your agency plan on using the National Fish, Wildlife, and Plants Climate Adaptation Strategy as a reference in the next State Wildlife Action Plan revision or other management plan revisions?

Yes

9. Does your state have a State Climate Adaptation Plan?

No

10. Is your agency pursuing any vulnerability assessments?

No (Go to #12)

11. If the answer is yes, what process was used? (Choose all that apply)

No Response

12. How is your agency addressing climate change impacts and climate-related impacts on the ground (i.e. reducing stressors, restoration, land acquisition, etc.)?

Continue to promote that many traditional wildlife management practices address stressors related to climate change or other long-term adaptation needs. We address fragmentation, connectivity, species (population) protection (refugia, stocking), conduct habitat manipulations, support prescribed burns, etc.

13. Where does your agency get climate change information? (Choose all that apply)

Within Your Agency

Other State Agencies

Academic Institutions

Peer Reviewed Journals

The Nature Conservancy

National Wildlife Federation

NatureServe

USGS

USFWS

14. What are the science and research needs for your agency in regards to climate change work?

Vulnerability assessments, water temperatures, impacts on reproduction cycles, fire regimes, invasive species.

15. Is your agency working with other departments or agencies within your state on climate change or climate-related issues?

Yes

LCCs, University of Arizona Climate Change Center

16. Is your agency involved in collaborative climate change projects with conservation partners (federal, state, NGO, academia, etc...)?

Yes

Same as above; mostly just coordination at this time and identification of research needs.

17. Is your agency working with the Landscape Conservation Cooperatives?

Occasionally (read updates and stay up to date on activities)

18. Is your agency undertaking any education and outreach efforts on the impacts of climate change on natural resources within your state? (Choose all that apply)

Staff

19. What is the future direction of climate change planning/ implementation in your agency/state in the coming year?

Seeking funding sources to provide resources/staff to adaptation planning and CC issues.

20. What are the challenges/barriers that are holding your agency back from doing climate change work? (Choose all that apply)

Lack of Funding

Lack of Time

Lack of Staff Expertise

Lack of Political Support

Lack of Biological Data

21. What additional training or information could the AFWA Climate Change Committee or the regional associations provide that would be helpful for your agency to incorporate climate change into agency work?

Examples of solid integration into Wildlife related management plans.

22. Are there any additional highlights, accomplishments, new initiatives, or actions that you would like to share (that have not been articulated yet)?

No Response

California

Name: Amber Pairis, Ph.D.

State Agency: California Department of Fish and Game

Contact Information: apairis@dfg.ca.gov

1. What state agency do you work for? What is your title?

California Department of Fish and Game

2. What regional association is your agency associated with? (Choose all that apply)

WAFWA

3. Does your agency have a position that is solely dedicated to climate change (either mitigation or adaptation)?

Yes

1 for adaptation plus some sustainability initiatives that could fall under "mitigation"

4. How does your agency fund climate change work? (Choose all that apply)

State Wildlife Grants

General Funds

5. Is your agency updating their State Wildlife Action Plan for climate change?

In Process

6. If so, how is your agency updating their State Wildlife Action Plan for climate change? (Choose all that apply)

Included throughout the document

Working with partners

Working "in house"

Contracting it out

we are doing it in-house with partners but contracting out the actual writing. CC will be integrated throughout the document but there will be a stand along chapter no cc impacts and state wide adaptation strategies.

7. Is your agency updating other management plans for climate change?

Yes

not officially but many of our new plans such as Desert Renewable Energy Conservation Plan and Bay Delta Conservation Plan include CC plus other management plans for target species or management areas have cc considerations

8. Does your agency plan on using the National Fish, Wildlife, and Plants Climate Adaptation Strategy as a reference in the next State Wildlife Action Plan revision or other management plan revisions?

Yes

9. Does your state have a State Climate Adaptation Plan?

Completed

CA Natural Resource Agency was lead but DFG lead of the biodiversity section. Preparing for a 2012 update to the strategy and DFG will lead the biodiversity section again.

10. Is your agency pursuing any vulnerability assessments?

Completed

11. If the answer is yes, what process was used? (Choose all that apply)

NatureServe Vulnerability Index

Self-Developed Framework or Index

12. How is your agency addressing climate change impacts and climate-related impacts on the ground (i.e. reducing stressors, restoration, land acquisition, etc.)?

yes-we have a series of climate change case studies that address this question online at http://www.dfg.ca.gov/Climate_and_Energy/Climate_Change/Case_Studies/

13. Where does your agency get climate change information? (Choose all that apply)

Within Your Agency

Other State Agencies

Academic Institutions

Peer Reviewed Journals

USGS

USFWS

NOAA

United States Global Change Research Program

Intergovernmental Panel on Climate Change

14. What are the science and research needs for your agency in regards to climate change work?

California DFG Climate Change Research Needs (PDF) http://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=42547

15. Is your agency working with other departments or agencies within your state on climate change or climate-related issues?

Yes

several projects with the CA Dept., of water resources and recently completed a project with CalTrans called the CA Essential Habitat Connectivity Project online at http://www.dfg.ca.gov/habcon/connectivity/

16. Is your agency involved in collaborative climate change projects with conservation partners (federal, state, NGO, academia, etc...)?

Yes

We have several examples but recently we are working collaboratively with Defenders of Wildlife to pursue an open standards process as part of our Wildlife Action Plan revision.

17. Is your agency working with the Landscape Conservation Cooperatives?

Actively (actively participating and/or fill a leadership role)

18. Is your agency undertaking any education and outreach efforts on the impacts of climate change on natural resources within your state? (Choose all that apply)

General Public

Hunters and Anglers

Legislators and other Elected Officials

Staff

Local Government

Conservation Partners

19. What is the future direction of climate change planning/ implementation in your agency/state in the coming year?

Focus on building internal capacity through training and internal communication, supporting the revision of the wildlife action plan to insure that cc is integrated throughout, and maintaining and creating collaborative partnerships.

20. What are the challenges/barriers that are holding your agency back from doing climate change work? (Choose all that apply)

Lack of Funding

Lack of Time

lack of people to pursue climate initiatives and integration which is a funding and time issue.

21. What additional training or information could the AFWA Climate Change Committee or the regional associations provide that would be helpful for your agency to incorporate climate change into agency work?

No Response

22. Are there any additional highlights, accomplishments, new initiatives, or actions that you would like to share (that have not been articulated yet)?

revision of our website that more clearly articulates CA DFG's climate related actions; new climate vulnerability resource center, and sustainability initiatives. all info online http://www.dfg.ca.gov/Climate_and_Energy/Climate_Change/

Colorado

Name: Tom Schreiner

State Agency: Colorado Division of Wildlife

Contact Information: tom.schreiner@state.co.us

1. What state agency do you work for? What is your title?

Colorado Parks & Wildlife

2. What regional association is your agency associated with? (Choose all that apply)

WAFWA

3. Does your agency have a position that is solely dedicated to climate change (either mitigation or adaptation)?

Yes

Adaptation - 1 position

4. How does your agency fund climate change work? (Choose all that apply)

State License Dollars

Great Outdoors Colorado Severance Tax

5. Is your agency updating their State Wildlife Action Plan for climate change?

Not Started (Go to #7)

6. If so, how is your agency updating their State Wildlife Action Plan for climate change? (Choose all that apply)

No Response

7. Is your agency updating other management plans for climate change?

No

8. Does your agency plan on using the National Fish, Wildlife, and Plants Climate Adaptation Strategy as a reference in the next State Wildlife Action Plan revision or other management plan revisions?

Not Sure; have not read it yet/ waiting for the final version

9. Does your state have a State Climate Adaptation Plan?

No

10. Is your agency pursuing any vulnerability assessments?

In planning process

11. If the answer is yes, what process was used? (Choose all that apply)

No Response

12. How is your agency addressing climate change impacts and climate-related impacts on the ground (i.e. reducing stressors, restoration, land acquisition, etc.)?

Colorado Parks & Wildlife is engaged in a variety of on-the-ground management activities to reduce existing non-climate threats and stressors such as habitat type conversion (e.g., pinyonjuniper invasion of sagebrush), invasive species (e.g., zebra/quagga mussels, salt cedar, knapweed) urban/suburban development, energy development (e.g., oil, gas, wind), and wildlife diseases/pathogens (e.g., plague, white-nosed syndrome, whirling disease). We are also engaged in a variety of restoration and enhancement activities to benefit wetlands and waterfowl species, riparian corridors and associated species, big game winter range and transition range, stream habitat for priority cold-water species, grassland habitat supporting upland game birds, and habitats in support of at risk species such as Gunnison and greater sage grouse. In addition, we are engaged in monitoring activities to assess the distribution and abundance of rare and imperiled species in a variety of ecosystems. We anticipate incorporating climate change considerations into future land acquisition decisions, existing management and recovery plans, and existing programs such as the National Fish Habitat Action Plan, Wetland Wildlife Conservation Program, and Colorado Wildlife Habitat Protection Program particularly as they relate to crucial habitats and wildlife corridors. However, we are not yet at a stage where we are prepared to incorporate climate change considerations into these existing decisions, plans, and programs.

13. Where does your agency get climate change information? (Choose all that apply)

State Climatologist

Other State Agencies

Academic Institutions

Peer Reviewed Journals

The Nature Conservancy

National Wildlife Federation

NatureServe

USGS

USFWS

USFS

NOAA

EPA

United States Global Change Research Program

Intergovernmental Panel on Climate Change

Western Water Assessment, Rocky Mountain Climate Organization, National Phenology Network, www.CAKEX.org, North Central Climate Science Center, National Center for Atmospheric Research

14. What are the science and research needs for your agency in regards to climate change work?

Research Assessing and quantifying the short-term and long-term implications of forest health issues (i.e., mountain pine beetle infestation, spruce beetle infestation, sudden aspen decline, etc.) on fish and wildlife and their habitats. This needs to be done for priority sport fish, game species, species of greatest conservation need, and charismatic watchable wildlife species. Science Develop a set of projections for how climate is likely to change in Colorado by major climate regions and elevation zones of the state. Along with these projections, develop a set of plausible scenarios that cover the range of possible outcomes that may also be used to address uncertainty associated with the projected changes in climate. Complete a "climate turnover analysis" that encompasses the varied topography of Colorado to quantify the magnitude of change in climate variables for future climate projections. This analysis will help to ascertain geographic and/or elevation zones that are likely to experience significant change, moderate change, and little or no change in climate variables. This analysis will aid in targeting areas of possible refugia, areas for future land acquisition, areas of possible management intervention and adaptation strategies, and areas where management intervention and adaptation strategies may not be effective. Assessment of the relative vulnerability of priority ecosystems (alpine tundra, subalpine forests, montane forests, pinyon-juniper woodlands, grasslands, sage-grass shrublands, desert shrublands, riparian corridors, and wetlands), wildlife movement corridors, and a suite of priority Colorado species to the anticipated effects of climate change; assessment of the relative vulnerability of priority aquatic ecosystems and their associated water rights and in-stream flows; assessment of possible changes in the distribution and abundance of priority habitats and species

due to climate change; and assessment of the magnitude and extent of change (increase, loss, no change) and the magnitude and extent of fragmentation of crucial habitats and wildlife corridors due to all threats and stressors including climate change. Develop reliable methods and metrics for assessing and quantifying short-term and long-term drought impacts to priority ecosystems, habitats, and species. Development of a wildlife adaptation Decision Support System that integrates all major threats and stressors to habitats and species along with projections for future water availability in the major river basins of the State and the desired water needs for fish and wildlife to help guide and prioritize future wildlife management and land acquisition decisions. Develop a suitable bio-climate analysis for a suite of species of greatest conservation need to assess the magnitude of possible change in bio-diversity by mid-century. Link downscaled climate projections for Colorado with ecological response models that will help define possible changes in ecosystems and priority habitats due to projected changes in climate. Assessment and quantification of expected phenological changes and translation of how those changes may impact the annual, seasonal, and life cycle requirements of priority game and fish species and species of greatest conservation need; and translation of how those changes may impact crucial wildlife habitats (summer range, winter range, production areas, etc.) and wildlife movement corridors within priority ecosystems. Assessment of what are the critical hydrologic thresholds that will result in significant changes in dominant vegetation types in Colorado, such as the mountain shrub lands and sage-grass ecosystems of the Western Slope, i.e., what are the climatic envelopes of these ecosystems and which ones are most likely to experience a conversion to a different vegetative land cover due to a changing climate.

15. Is your agency working with other departments or agencies within your state on climate change or climate-related issues?

Yes

We are working with the Colorado Water Conservation Board on water adaptation and drought mitigation issues. The various projects include Colorado's Interbasin Compact Committee Process for identification and protection of non-consumptive needs (water levels, minimum instream flows), implementation of Colorado's Drought Mitigation & Response Plan/Wildlife Impact Task Force, and projecting changes in water levels and stream flow for priority riparian corridors through the Colorado River Water Availability Study and the Front Range Water Availability Study. We are also coordinating with the Colorado State Forest Service to utilize their GIS mapping that defines the extent and distribution of forest health issues throughout the state such as mountain pine beetle infestation, spruce beetle infestation, sudden aspen decline, and others.

16. Is your agency involved in collaborative climate change projects with conservation partners (federal, state, NGO, academia, etc...)?

Yes

Colorado State University - We are partnering with CSU/Natural Resource Ecology lab on a study regarding the distribution and abundance patterns of Great Plains reptiles: implications for climate change and energy development. This study will provide a summary of historical and contemporary distribution data for a group of species (including several of potential conservation concern) for which data are either few or completely lacking. Results of this project will better enable management agencies to recommend and implement plans for improving the persistence of terrestrial reptilian species at both local and regional scales. This project will also provide robust baseline information on reptile populations, which can be used with future monitoring efforts to assess population changes over time. The Nature Conservancy/Gunnison Basin Pilot Project - We are partnering with TNC and other stakeholders to conduct a vulnerability assessment of priority ecosystems and species, development of adaptation strategies for high risk ecosystems and species (headwater streams, sage grouse, subalpine wetlands), and implement a landscape-scale conservation project to improve brood rearing habitat for Gunnison sage grouse. Trout Unlimited/USFS - We are partnering with Trout Unlimited, USFS, and others and anticipate additional funding in 2012 to advance on-the-ground adaptation measures for a watershed in Colorado that is at moderate to high risk of climate change and climate-related disturbance, and where the coldwater natives are already threatened by elevation summer temperatures. Western Governors Association - As part of a regional initiative led by the Western Governors' Association, Colorado Parks & Wildlife continues to move forward with developing a map of "crucial habitat" areas and a crucial habitat assessment tool (CHAT). We have gathered a wide range of input datasets and are working with other states to develop a regionally-consistent methodology for identifying crucial areas. The final map will be completed in 2013. Rocky Mountain Wild - We are partnering with RMW to develop a database and set of geo-spatial maps of large-scale wildlife movement corridors throughout the state; and to complete an assessment of suitable bio-climate for a suite of priority species, and the potential implications for existing large-scale wildlife movement corridors in Colorado.

17. Is your agency working with the Landscape Conservation Cooperatives?

Actively (actively participating and/or fill a leadership role)

18. Is your agency undertaking any education and outreach efforts on the impacts of climate change on natural resources within your state? (Choose all that apply)

Hunters and Anglers

School Children

Staff

Hunters & Anglers - We are currently working with representatives of the Theodore Roosevelt Conservation Partnership to develop a climate adaptation message for future outreach of hunters

and anglers, and conservation groups. We anticipate this education and outreach campaign, spearheaded and led by TRCP, to begin in either late 2012 or 2013.

19. What is the future direction of climate change planning/ implementation in your agency/state in the coming year?

1. Convene an intra-agency workshop to flesh out agency goals, priorities, and objectives for climate adaptation for fish, wildlife, and parks resources. 2. Anticipate working with TRCP on climate adaptation messaging and outreach to sportsmen/conservation groups throughout Colorado. 3. Parks & Wildlife Commission - will brief the commission on climate change projections and anticipated impacts to habitats and species. 4. Climate Turnover Analysis & Regional Climate Projections - partner with the North Central Climate Science Center to produce a set of climate projections for major climate regions of the state and to produce a climate downscaling analysis that will inform the projected magnitude of change in climate variables in Colorado by geography and by elevation. 5. Connect elements of Item 4 above with future water availability in major river basins of the state. 6. Identify and prioritize fish, wildlife, and parks water needs throughout the state in order to inform non-consumptive needs and the Inter-Basin Compact Committee process. 7. Vulnerability Assessments - develop consensus on need for and type of VA to pursue, pursue funding options, develop stakeholders, and evaluate methods for conducting priority vulnerability assessments. 8. Assess work products needed to inform climate change update to State Wildlife Action Plan. 9. Coordinate with the North Central Climate Science Center and other regional climate change projects as necessary to develop and refine our understanding of scaled-down projections of climate change to Colorado's wildlife habitats and species. 10. Landscape Conservation Cooperatives - collaborate with 3 LCC's covering Colorado to assess and prioritize regional fish, wildlife, outdoor recreation needs. 11. WAFWA participate in WAFWA Climate Working Group discussions to assess and prioritize regional climate change adaptation needs for fish and wildlife. 12. Monitoring Workshop - evaluate metrics for SWAP (consider all stressors including climate change); either 2012 or 2013.

20. What are the challenges/barriers that are holding your agency back from doing climate change work? (Choose all that apply)

Lack of Funding

Lack of Climate Data

Lack of Biological Data

Lack of Biological Data - connecting climate models to ecological response and habitat models. Resources - We will need additional financial and technical resources to fully develop climate change adaptation planning to monitor the effects of future drought and other climate change impacts on our wildlife resources, to monitor the effectiveness of adaptation actions, and to employ adaptation strategies and actions that are greater in scope and/or different from our

existing suite of management actions. Regionally Specific Information - We require more regionally specific information about the projected changes in climate variables in our highly diverse and complex high elevation state and the resulting predicted impacts to ecosystems, habitats, and species (and how those relate to other threats) before we can develop adaptation strategies. We will rely heavily on the North Central Climate Science Center, LCC's covering Colorado, USFWS, USGS, and others to develop consensus on appropriate climate models, ecological response models, and habitat models appropriate for Colorado's diverse topography that will result in reliable, down-scaled predictions of climate change impacts on Colorado's ecosystems, habitats, populations, and species. Increased Coordination & Clarifying of Roles -There remains a critical need for increased coordination and clarifying of roles and responsibilities for future wildlife conservation regarding federal and state Agencies and NGO's. State fish and wildlife agencies are expected to play an integral role in landscape conservation initiatives as coordinated through the Department of Interior's Landscape Conservation Cooperatives, yet the details of how conservation priorities and conservation targets for habitats and species will be determined by agencies with varying jurisdictions is yet to come. There is also an expectation that states will need to engage in multi-sector climate change natural resource adaptation plans. As a result, the need to clarify the role of state fish and wildlife agencies in these planning efforts, relative to the role of federal agencies engaged in fish and wildlife conservation will become more important than ever.

21. What additional training or information could the AFWA Climate Change Committee or the regional associations provide that would be helpful for your agency to incorporate climate change into agency work?

Internal and external Climate Change Outreach, Messaging, and Communication strategies. Projecting and quantifying loss or gain in quality and extent of suitable habitat. Methods and techniques for projecting and quantifying fragmentation of crucial habitats and wildlife corridors. Methods for enhancing connectivity of aquatic and/or terrestrial habitats and corridors. Methods for assessing and quantifying both short-term and long-term drought impacts to ecosystems, habitats, populations, and species. Listing and prioritizing regional climate change concerns where there is commonality among several or more western states regarding concerns for habitat, species, connectivity, climate science, scenario planning, future climate projections, bio-climate modeling, funding for climate adaptation planning, funding for climate adaptation on-the-ground projects, multi-state collaborations for climate and wildlife research, or other. (Regional concerns may be framed as Northern Rockies, Southern Rockies, or Great Plains concerns).

22. Are there any additional highlights, accomplishments, new initiatives, or actions that you would like to share (that have not been articulated yet)?

On January 19-20, 2012 we held an Internal Climate Change Workshop for select agency staff to orient them on 1) Climate Change 101: An introduction to the science and issues of climate change, 2) Action, Resources, Research: A review of planning, research, and management

activities currently being undertaken in Colorado and our region by Federal Agencies, Universities, and NGO's to address climate change and wildlife, and 3) Climate Change Adaptation: Discussion and deliberation about what it might look like to integrate climate change into our agency's fish, wildlife, habitat, and outdoor recreation activities. The goals of the workshop were to 1) provide information for our Internal Climate Advisory Team and other staff members that will allow them to develop a baseline knowledge of key climate change concepts, what existing science shows about how climate is projected to change in Colorado, and the implications for flora/fauna, and current research, monitoring strategy development and adaptation activities (state, federal, non-governmental), 2) Develop broad, conceptual agreement among working group members on why and how Colorado Parks and Wildlife should engage on climate change adaptation, and 3) Identify next steps for agency personnel, including planning activities, strategy development, monitoring, research priorities, and outreach activities. We anticipate a follow-up workshop in 2012 with key staff members to better define and prioritize our agency's vision, goals, and objectives for safeguarding Colorado's wildlife resource from the current and projected impacts of accelerated climate change, along with other threats and stressors.

Hawaii

Name: Scott Fretz

State Agency: Hawaii Department of Land and Natural Resources

Contact Information: scott.fretz@hawaii.gov

1. What state agency do you work for? What is your title?

Hawaii Department of Land and Natural Resources / Division of Forestry and Wildlife

2. What regional association is your agency associated with? (Choose all that apply)

WAFWA

3. Does your agency have a position that is solely dedicated to climate change (either mitigation or adaptation)?

No

4. How does your agency fund climate change work? (Choose all that apply)

N/A

5. Is your agency updating their State Wildlife Action Plan for climate change?

Not Started (Go to #7)

6. If so, how is your agency updating their State Wildlife Action Plan for climate change? (Choose all that apply)

No Response

7. Is your agency updating other management plans for climate change?

Yes

State Coastal Zone Management Program is updating the Ocean Resources Management Plan (ORMP), which is required by state law to be updated every five years.

8. Does your agency plan on using the National Fish, Wildlife, and Plants Climate Adaptation Strategy as a reference in the next State Wildlife Action Plan revision or other management plan revisions?

Not Sure; have not read it yet/ waiting for the final version

9. Does your state have a State Climate Adaptation Plan?
No
10. Is your agency pursuing any vulnerability assessments?
In planning process
11. If the answer is yes, what process was used? (Choose all that apply)
Self-Developed Framework or Index
12. How is your agency addressing climate change impacts and climate-related impacts on the ground (i.e. reducing stressors, restoration, land acquisition, etc.)?
N/A
13. Where does your agency get climate change information? (Choose all that apply)
Within Your Agency
State Climatologist
Other State Agencies
Academic Institutions
Peer Reviewed Journals
The Nature Conservancy
National Wildlife Federation
NatureServe
USGS
USFWS
USFS
NOAA
EPA
United States Global Change Research Program
Intergovernmental Panel on Climate Change

State Coastal Zone Management Program, Office of Planning, Pacific Islands Climate Change Cooperative (PICCC), Center for Island Climate Adaptation and Policy The Center for Island Climate Adaptation and Policy (ICAP) facilitates a sustainable, climate-conscious future for Hawai\(\mathbb{I}\)i, the Pacific, and global island communities. ICAP produces innovative, interdisciplinary research and solutions to island decision-makers in the public and private sectors. As a focal point for University of Hawai\(\mathbb{I}\)i (UH) climate expertise, ICAP serves as a two-way conduit between the university and island communities to catalyze climate change adaptation and resiliency.

14. What are the science and research needs for your agency in regards to climate change work?

Improve methods to minimize long-term impacts to coral reefs from shoreline projects (e.g., stream channels, dredging, beach replenishment, and harbor development). (1.00) Develop science-based criteria and best management practices for ecosystem-based approaches for near shore fisheries management in Hawai`i. (0.93). Understand the impacts of climate change on island carrying capacity (e.g., potable water, waste disposal, energy use and production, transportation, economics, and living space). (0.88) Assess the impacts of shoreline projects (e.g., stream channels, dredging, beach replenishment, and harbor development) on coral reef productivity. (0.85) Understand and map major impacts (e.g., sea level rise, saltwater intrusion, and weather conditions) of climate change on shorelines and infrastructure. (0.81) Relate various impacts of land use and development practices to localized degradation of environmental quality including marine ecosystems. (0.79) Understand the dynamics of, and model pollutant and nutrient loads from, point or non-point sources to receiving waters as a function of land use and development patterns. (0.74)

15. Is your agency working with other departments or agencies within your state on climate change or climate-related issues?

Yes

Too many to list; not sure of current status. Next meeting of ORMP Climate Change Working Group will take place on April 5 where agencies will report out on what they are working on. To date, much planning and grant writing, very little on-the-ground action pending direction from the Legislature and Executive Branch of State Government this spring.

16. Is your agency involved in collaborative climate change projects with conservation partners (federal, state, NGO, academia, etc...)?

Yes

Most projects in planning stage.

17. Is your agency working with the Landscape Conservation Cooperatives?

Actively (actively participating and/or fill a leadership role)

Not focusing on climate change issues, but on preservation of scenic, recreational or areas of high biodiversity.

18. Is your agency undertaking any education and outreach efforts on the impacts of climate change on natural resources within your state? (Choose all that apply)

General Public

Landowners

School Children

Legislators and other Elected Officials

Staff

Local Government

Conservation Partners

19. What is the future direction of climate change planning/ implementation in your agency/state in the coming year?

A "Statewide Climate Change Adaptation Policy" is working its way through the Hawaii Legislature, and will very likely be passed and signed into law by June 15, 2012.

20. What are the challenges/barriers that are holding your agency back from doing climate change work? (Choose all that apply)

Lack of Funding

Lack of Time

Lack of Political Support

Lack of Climate Data

Regional climate data must be downscaled to be relevant to Hawaii's spatial diversity and biodiversity

21. What additional training or information could the AFWA Climate Change Committee or the regional associations provide that would be helpful for your agency to incorporate climate change into agency work?

Would have to refer you to Scott Fretz, our Wildlife Program Manager or to Paul Conry our State Forester for this question. Scott Fretz (808) 587-4187, Scott.Fretx@hawaii.gov

22. Are there any additional highlights, accomplishments, new initiatives, or actions that you would like to share (that have not been articulated yet)?

There are two very active committees working on Climate Change to be integrated in the updated Ocean Resources Management Plan (ORMP). In general, all agencies, NGOs and academic institutions work very well together in Hawaii. We have many active collaborations and we regularly communicate with each other. Aloha in action

Idaho

Name: Sharon W. Kiefer

State Agency: Idaho Department of Fish and Game

Contact Information: sharon.kiefer@idfg.idaho.gov

1. What state agency do you work for? What is your title?

Idaho Dept. of Fish and Game

2. What regional association is your agency associated with? (Choose all that apply)

WAFWA

3. Does your agency have a position that is solely dedicated to climate change (either mitigation or adaptation)?

No

4. How does your agency fund climate change work? (Choose all that apply)

State Wildlife Grants

Landscape Conservation Cooperatives

5. Is your agency updating their State Wildlife Action Plan for climate change?

In Process

6. If so, how is your agency updating their State Wildlife Action Plan for climate change? (Choose all that apply)

Included throughout the document

Working with partners

Working "in house"

7. Is your agency updating other management plans for climate change?

Yes

Bonneville cutthroat trout, bull trout

8. Does your agency plan on using the National Fish, Wildlife, and Plants Climate Adaptation Strategy as a reference in the next State Wildlife Action Plan revision or other management plan revisions?
Yes
9. Does your state have a State Climate Adaptation Plan?
No
10. Is your agency pursuing any vulnerability assessments?
Underway
11. If the answer is yes, what process was used? (Choose all that apply)
NatureServe Vulnerability Index
Expert Panel
Self-Developed Framework or Index
We are part of a collaborative research project focused on assessing the vulnerability of species and ecosystems in the Pacific Northwest.
12. How is your agency addressing climate change impacts and climate-related impacts on the ground (i.e. reducing stressors, restoration, land acquisition, etc.)?
restoring habitat, removing barriers to population connectivity, monitoring stream temperatures, habitat occupancy, species status assessments
13. Where does your agency get climate change information? (Choose all that apply)
Within Your Agency
State Climatologist
Academic Institutions
Peer Reviewed Journals
USGS
USFWS

USFS

United States Global Change Research Program

Intergovernmental Panel on Climate Change

14. What are the science and research needs for your agency in regards to climate change work?

IDFG research needs center around assessing the sensitivity, exposure, and adaptive capacity of species to climate change. Even with completion of the PNW project, there will still be several research needs in regards to climate change adaptation planning. For example, the downscaled (1km) climate models represent significant progress (as compared with the global models) yet are still too coarse to address many local and state management needs and range of uncertainty is still high. In addition, the lack of basic natural history information for many species and their habitats is a hindrance. It is often not clear how species will react to particular temperature and/or precipitation changes, if thresholds occur beyond which the populations may decline, and if the current relationships between species and their habitats will persist. Given these uncertainties, experience and knowledge on addressing and planning for the 'unknown', such as implementation of adaptive management and structured decision making, would be helpful. We also continue to need information on the efficacy of management actions for species and habitats in the face of climate change.

15. Is your agency working with other departments or agencies within your state on climate change or climate-related issues?

No

16. Is your agency involved in collaborative climate change projects with conservation partners (federal, state, NGO, academia, etc...)?

Yes

Pacific NW Vulnerability Assessment - Partners include: USGS, USFWS, USFS, Univ. of Idaho, Univ. of Washington, TNC, WDFW, IDFG

17. Is your agency working with the Landscape Conservation Cooperatives?

Frequently (participate in conference calls and attend meetings when possible)

18. Is your agency undertaking any education and outreach efforts on the impacts of climate change on natural resources within your state? (Choose all that apply)

None

Not that we're aware of.

19. What is the future direction of climate change planning/ implementation in your agency/state in the coming year?

Completion of the Pacific NW Vulnerability Assessment and continued revision of the Idaho SWAP

20. What are the challenges/barriers that are holding your agency back from doing climate change work? (Choose all that apply)

Lack of Funding

Lack of Time

Lack of Political Support

Lack of consistent and integrated state and federal policy and expectations

21. What additional training or information could the AFWA Climate Change Committee or the regional associations provide that would be helpful for your agency to incorporate climate change into agency work?

Nothing right now.

22. Are there any additional highlights, accomplishments, new initiatives, or actions that you would like to share (that have not been articulated yet)?

No.

Kansas

Name: Steve Adams
State Agency: Kansas Department of Wildlife and Parks
Contact Information: stevea@wp.state.ks.us
1. What state agency do you work for? What is your title?
Kansas Dept. of Wildlife, Parks and Tourism
2. What regional association is your agency associated with? (Choose all that apply)
MAFWA
WAFWA
3. Does your agency have a position that is solely dedicated to climate change (either mitigation or adaptation)?
No
4. How does your agency fund climate change work? (Choose all that apply)
State Wildlife Grants
State License Dollars
Landscape Conservation Cooperatives
5. Is your agency updating their State Wildlife Action Plan for climate change?
In Process
6. If so, how is your agency updating their State Wildlife Action Plan for climate change? (Choose all that apply)
Working with partners
Working "in house"
7. Is your agency updating other management plans for climate change?
No
8. Does your agency plan on using the National Fish, Wildlife, and Plants Climate Adaptation Strategy as a reference in the next State Wildlife Action Plan revision or other management plan revisions?
Not Sure; have not read it yet/ waiting for the final version

9. Does your state have a State Climate Adaptation Plan?
No
10. Is your agency pursuing any vulnerability assessments?
No (Go to #12)
11. If the answer is yes, what process was used? (Choose all that apply)
No Response
12. How is your agency addressing climate change impacts and climate-related impacts on the ground (i.e. reducing stressors, restoration, land acquisition, etc)?
No Response
13. Where does your agency get climate change information? (Choose all that apply)
Academic Institutions
Peer Reviewed Journals
Intergovernmental Panel on Climate Change
14. What are the science and research needs for your agency in regards to climate change work?
current distribution of species under current climate conditionsmobility of species and assessing fragmentation/"hostile environment" distances between suitable habitat
15. Is your agency working with other departments or agencies within your state on climate change or climate-related issues?
No
16. Is your agency involved in collaborative climate change projects with conservation partners (federal, state, NGO, academia, etc)?
No
17. Is your agency working with the Landscape Conservation Cooperatives?
Actively (actively participating and/or fill a leadership role)
18. Is your agency undertaking any education and outreach efforts on the impacts of climate change on natural resources within your state? (Choose all that apply)

None

19. What is the future direction of climate change planning/implementation in your agency/state in the coming year?

Incorporating climate change language/assessment in our ongoing SWAP revision

20. What are the challenges/barriers that are holding your agency back from doing climate change work? (Choose all that apply)

Lack of Funding

Lack of Time

Lack of Political Support

21. What additional training or information could the AFWA Climate Change Committee or the regional associations provide that would be helpful for your agency to incorporate climate change into agency work?

Examples of those states that are actively addressing climate change.

22. Are there any additional highlights, accomplishments, new initiatives, or actions that you would like to share (that have not been articulated yet)?

No Response

Montana

1. What state agency do you work for? What is your title?

Montana Fish, Wildlife and Parks Wildlife

2. What regional association is your agency associated with? (Choose all that apply)

WAFWA

3. Does your agency have a position that is solely dedicated to climate change (either mitigation or adaptation)?

No

4. How does your agency fund climate change work? (Choose all that apply)

State Wildlife Grants

5. Is your agency updating their State Wildlife Action Plan for climate change?

In Process

Name: Ken McDonald

State Agency: Montana Fish, Wildlife & Parks

6. If so, how is your agency updating their State Wildlife Action Plan for climate change? (Choose all that apply)

Included throughout the document

7. Is your agency updating other management plans for climate change?

No

8. Does your agency plan on using the National Fish, Wildlife, and Plants Climate Adaptation Strategy as a reference in the next State Wildlife Action Plan revision or other management plan revisions?

No

9. Does your state have a State Climate Adaptation Plan?

No

10. Is your agency pursuing any vulnerability assessments?

No (Go to #12)

11. If the answer is yes, what process was used? (Choose all that apply)

No Response

12. How is your agency addressing climate change impacts and climate-related impacts on the ground (i.e. reducing stressors, restoration, land acquisition, etc.)?

Continued focus on conservation of priority habitats and protection of instream flows

13. Where does your agency get climate change information? (Choose all that apply)

Academic Institutions

Peer Reviewed Journals

Intergovernmental Panel on Climate Change

14. What are the science and research needs for your agency in regards to climate change work?

scaled down models that better predict impacts of climate change on different ecotypes. Monitoring of predicted impacts to determine model accuracy

15. Is your agency working with other departments or agencies within your state on climate change or climate-related issues?

No

16. Is your agency involved in collaborative climate change projects with conservation partners (federal, state, NGO, academia, etc...)?

No

17. Is your agency working with the Landscape Conservation Cooperatives?

Minimally

18. Is your agency undertaking any education and outreach efforts on the impacts of climate change on natural resources within your state? (Choose all that apply)

None

19. What is the future direction of climate change planning/implementation in your agency/state in the coming year?

Attempt to incorporate potential for climate change impacts in revision of SWAP. Attempt to establish monitoring of key habitat types that may be affected by climate change

20. What are the challenges/barriers that are holding your agency back from doing climate change work? (Choose all that apply)

Lack of Funding

Lack of Time

Lack of Staff Interest

Lack of Climate Data

Uncertainty of models towards predicting impacts. Hard to get people interested when models predicts potential impacts at both end of spectrum (things can get better or get way worse)

21. What additional training or information could the AFWA Climate Change Committee or the regional associations provide that would be helpful for your agency to incorporate climate change into agency work?

Analysis and interpretation of climate change models.

22. Are there any additional highlights, accomplishments, new initiatives, or actions that you would like to share (that have not been articulated yet)?

No Response

Nebraska

Nebraska Name: Rick Schneider
State Agency: Nebraska Game and Parks Commission
Contact Information: rick.schneider@nebraska.gov
1. What state agency do you work for? What is your title?
Nebraska Game and Parks Commission
2. What regional association is your agency associated with? (Choose all that apply)
MAFWA
WAFWA
3. Does your agency have a position that is solely dedicated to climate change (either mitigation or adaptation)?
No
4. How does your agency fund climate change work? (Choose all that apply)
State Wildlife Grants
General Funds
5. Is your agency updating their State Wildlife Action Plan for climate change?
Completed
6. If so, how is your agency updating their State Wildlife Action Plan for climate change? (Choose all that apply)
Included throughout the document
7. Is your agency updating other management plans for climate change?
No
8. Does your agency plan on using the National Fish, Wildlife, and Plants Climate Adaptation Strategy as a reference in the next State Wildlife Action Plan revision or other management plan revisions?
Yes
9. Does your state have a State Climate Adaptation Plan?

No 10. Is your agency pursuing any vulnerability assessments? Completed 11. If the answer is yes, what process was used? (Choose all that apply) NatureServe Vulnerability Index **Expert Panel** 12. How is your agency addressing climate change impacts and climate-related impacts on the ground (i.e. reducing stressors, restoration, land acquisition, etc)? Most of our work has been on reducing non-climate stressors, e.g. restoring ecological processes (fire), reducing invasives, etc. 13. Where does your agency get climate change information? (Choose all that apply) Academic Institutions Peer Reviewed Journals National Wildlife Federation NatureServe **USGS USFWS** USFS NOAA United States Global Change Research Program Intergovernmental Panel on Climate Change 14. What are the science and research needs for your agency in regards to climate change work? Monitor species and system response to CC, conduct vulnerability assessments for natural communities, landscape connectivity modeling

15. Is your agency working with other departments or agencies within your state on climate change or climate-related issues?

No

16. Is your agency involved in collaborative climate change projects with conservation partners (federal, state, NGO, academia, etc...)?

No

17. Is your agency working with the Landscape Conservation Cooperatives?

Occasionally (read updates and stay up to date on activities)

18. Is your agency undertaking any education and outreach efforts on the impacts of climate change on natural resources within your state? (Choose all that apply)

Conservation Partners

Agency staff

19. What is the future direction of climate change planning/implementation in your agency/state in the coming year?

Conduct CC vulnerability assessent of selected natural communities, use modeling techniques to identify landscape connectivity that would allow species to respond to CC, develop summary of CC management actions for conservation practitioners

20. What are the challenges/barriers that are holding your agency back from doing climate change work? (Choose all that apply)

Lack of Funding

Lack of Time

Lack of Political Support

21. What additional training or information could the AFWA Climate Change Committee or the regional associations provide that would be helpful for your agency to incorporate climate change into agency work?

Practical guide, with real world examples, of effective actions that land managers can take to address climate change impacts. The National F,W,&P Climate Adap. Strat has lots of mid to high elevation policy recommendations - what is needed is more guidance for on-the-ground work.

22. Are there any additional highlights, accomplishments, new initiatives, or actions that you would like to share (that have not been articulated yet)?

No Response

Nevada

Name: Laura Richards

State Agency: Nevada Department of Wildlife

Contact Information: lrichard@ndow.org

1. What state agency do you work for? What is your title?

Nevada Department of Wildlife

2. What regional association is your agency associated with? (Choose all that apply)

WAFWA

3. Does your agency have a position that is solely dedicated to climate change (either mitigation or adaptation)?

No

4. How does your agency fund climate change work? (Choose all that apply)

State Wildlife Grants

General Funds

state bond funds for climate change planning

5. Is your agency updating their State Wildlife Action Plan for climate change?

In Process

6. If so, how is your agency updating their State Wildlife Action Plan for climate change? (Choose all that apply)

Included throughout the document

Working with partners

7. Is your agency updating other management plans for climate change?

No

8. Does your agency plan on using the National Fish, Wildlife, and Plants Climate Adaptation Strategy as a reference in the next State Wildlife Action Plan revision or other management plan revisions?

Yes
9. Does your state have a State Climate Adaptation Plan?
No
10. Is your agency pursuing any vulnerability assessments?
Underway
11. If the answer is yes, what process was used? (Choose all that apply)
NatureServe Vulnerability Index
Expert Panel
12. How is your agency addressing climate change impacts and climate-related impacts on the ground (i.e. reducing stressors, restoration, land acquisition, etc.)?
reducing other stressors, restoration, land acquisition
13. Where does your agency get climate change information? (Choose all that apply)
Within Your Agency
State Climatologist
Other State Agencies
Academic Institutions
Peer Reviewed Journals
The Nature Conservancy
National Wildlife Federation
NatureServe
USGS
USFWS
USFS
NOAA

Intergovernmental Panel on Climate Change

14. What are the science and research needs for your agency in regards to climate change work?

connectivity, response of wildlife to changing habitats, monitoring species and habitats changes

15. Is your agency working with other departments or agencies within your state on climate change or climate-related issues?

Yes

climate change planning: Nevada Natural Heritage Program

16. Is your agency involved in collaborative climate change projects with conservation partners (federal, state, NGO, academia, etc...)?

Yes

climate change planning (via wildlife action plan): Lahontan Audubon Society, the Nature Conservancy, BLM, USFWS, USFS, Nevada Natural Heritage Program, Great Basin Bird Observatory

17. Is your agency working with the Landscape Conservation Cooperatives?

Frequently (participate in conference calls and attend meetings when possible)

18. Is your agency undertaking any education and outreach efforts on the impacts of climate change on natural resources within your state? (Choose all that apply)

Hunters and Anglers

Legislators and other Elected Officials

Staff

Conservation Partners

19. What is the future direction of climate change planning/ implementation in your agency/state in the coming year?

completion of revised wildlife action plan followed by plan implementation

20. What are the challenges/barriers that are holding your agency back from doing climate change work? (Choose all that apply)

Lack of Funding

Lack of Staff Expertise

21. What additional training or information could the AFWA Climate Change Committee or the regional associations provide that would be helpful for your agency to incorporate climate change into agency work?

No Response

22. Are there any additional highlights, accomplishments, new initiatives, or actions that you would like to share (that have not been articulated yet)?

No Response

New Mexico

Name: Matthew Wunder

State Agency: New Mexico Department of Game and Fish

Contact Information: Matthew.Wunder@state.nm.us

1. What state agency do you work for? What is your title?

New Mexico Dept. of Game and Fish

2. What regional association is your agency associated with? (Choose all that apply)

WAFWA

3. Does your agency have a position that is solely dedicated to climate change (either mitigation or adaptation)?

No

4. How does your agency fund climate change work? (Choose all that apply)

State Wildlife Grants

Pittman-Robertson

Wallop-Breaux

State License Dollars

Many projects related to species recovery and habitat could increase species resiliency in the face of changing climate.

5. Is your agency updating their State Wildlife Action Plan for climate change?

Not Started (Go to #7)

6. If so, how is your agency updating their State Wildlife Action Plan for climate change? (Choose all that apply)

No Response

7. Is your agency updating other management plans for climate change?

No

8. Does your agency plan on using the National Fish, Wildlife, and Plants Climate Adaptation Strategy as a reference in the next State Wildlife Action Plan revision or other management plan revisions?
Yes
9. Does your state have a State Climate Adaptation Plan?
No
10. Is your agency pursuing any vulnerability assessments?
No (Go to #12)
11. If the answer is yes, what process was used? (Choose all that apply)
No Response
12. How is your agency addressing climate change impacts and climate-related impacts on the ground (i.e. reducing stressors, restoration, land acquisition, etc.)?
Habitat restoration and species recovery projects.
13. Where does your agency get climate change information? (Choose all that apply)
Within Your Agency
Other State Agencies
Academic Institutions
Peer Reviewed Journals
The Nature Conservancy
National Wildlife Federation
USGS
USFWS
USFS
14. What are the science and research needs for your agency in regards to climate change work?

Effects of climate change on species and habitats statewide.

15. Is your agency working with other departments or agencies within your state on climate change or climate-related issues?

Yes

The Nature Conservancy NM, US Forest Service (Santa Fe National Forest).

16. Is your agency involved in collaborative climate change projects with conservation partners (federal, state, NGO, academia, etc...)?

Yes

Environmental Flows Council.

17. Is your agency working with the Landscape Conservation Cooperatives?

Actively (actively participating and/or fill a leadership role)

18. Is your agency undertaking any education and outreach efforts on the impacts of climate change on natural resources within your state? (Choose all that apply)

None

19. What is the future direction of climate change planning/ implementation in your agency/state in the coming year?

Participation in national conferences and educational opportunities.

20. What are the challenges/barriers that are holding your agency back from doing climate change work? (Choose all that apply)

Lack of Funding

Lack of Time

Lack of Staff Expertise

Lack of Biological Data

21. What additional training or information could the AFWA Climate Change Committee or the regional associations provide that would be helpful for your agency to incorporate climate change into agency work?

More detailed/specific information for species and regions. Climate change vulnerability assessment training. Incorporating climate change scenarios in planning.

22. Are there any additional highlights, accomplishments, new initiatives, or actions that you would like to share (that have not been articulated yet)?

No Response

North Dakota

Name: Terry Steinwand

State Agency: North Dakota Game and Fish Department

Contact Information: <u>tsteinwa@nd.gov</u>

1. What state agency do you work for? What is your title?

North Dakota Game and Fish

2. What regional association is your agency associated with? (Choose all that apply)

WAFWA

3. Does your agency have a position that is solely dedicated to climate change (either mitigation or adaptation)?

No

4. How does your agency fund climate change work? (Choose all that apply)

Landscape Conservation Cooperatives

5. Is your agency updating their State Wildlife Action Plan for climate change?

Not Started (Go to #7)

6. If so, how is your agency updating their State Wildlife Action Plan for climate change? (Choose all that apply)

No Response

7. Is your agency updating other management plans for climate change?

No

8. Does your agency plan on using the National Fish, Wildlife, and Plants Climate Adaptation Strategy as a reference in the next State Wildlife Action Plan revision or other management plan revisions?

Not Sure; have not read it yet/ waiting for the final version

9. Does your state have a State Climate Adaptation Plan?

No

10. Is your agency pursuing any vulnerability assessments?

No (Go to #12)

11. If the answer is yes, what process was used? (Choose all that apply)

No Response

12. How is your agency addressing climate change impacts and climate-related impacts on the ground (i.e. reducing stressors, restoration, land acquisition, etc.)?

Land acquisition, grassland easements, etc.

13. Where does your agency get climate change information? (Choose all that apply)

AFWA, WAFWA

14. What are the science and research needs for your agency in regards to climate change work?

Unsure

15. Is your agency working with other departments or agencies within your state on climate change or climate-related issues?

No

16. Is your agency involved in collaborative climate change projects with conservation partners (federal, state, NGO, academia, etc...)?

No

17. Is your agency working with the Landscape Conservation Cooperatives?

Frequently (participate in conference calls and attend meetings when possible)

18. Is your agency undertaking any education and outreach efforts on the impacts of climate change on natural resources within your state? (Choose all that apply)

No Response

19. What is the future direction of climate change planning/ implementation in your agency/state in the coming year?

Unsure; with small staff and other issues unable to dedicate time

20. What are the challenges/barriers that are holding your agency back from doing climate change work? (Choose all that apply)

Lack of Funding

Lack of Time

Lack of Political Support

21. What additional training or information could the AFWA Climate Change Committee or the regional associations provide that would be helpful for your agency to incorporate climate change into agency work?

No Response

22. Are there any additional highlights, accomplishments, new initiatives, or actions that you would like to share (that have not been articulated yet)?

Oklahoma

Name: Matthew Mattioda

State Agency: Oklahoma Department of Wildlife Conservation

Contact Information: mattioda@zoo.odwc.state.ok.us

1. What state agency do you work for? What is your title?

Oklahoma Department of Wildlife Conservation

2. What regional association is your agency associated with? (Choose all that apply)

SEAFWA

WAFWA

3. Does your agency have a position that is solely dedicated to climate change (either mitigation or adaptation)?

No

4. How does your agency fund climate change work? (Choose all that apply)

Landscape Conservation Cooperatives

We have not funded a climate change study as the sole funding agency, but we have supported climate change research as LCC partners through the Great Plains LCC and the Gulf Plains/Ozarks LCC.

5. Is your agency updating their State Wildlife Action Plan for climate change?

In Process

6. If so, how is your agency updating their State Wildlife Action Plan for climate change? (Choose all that apply)

Stand-alone chapter

Working "in house"

7. Is your agency updating other management plans for climate change?

No

8. Does your agency plan on using the National Fish, Wildlife, and Plants Climate Adaptation Strategy as a reference in the next State Wildlife Action Plan revision or other management plan revisions?

Yes

9. Does your state have a State Climate Adaptation Plan?

No

10. Is your agency pursuing any vulnerability assessments?

No (Go to #12)

11. If the answer is yes, what process was used? (Choose all that apply)

No Response

12. How is your agency addressing climate change impacts and climate-related impacts on the ground (i.e. reducing stressors, restoration, land acquisition, etc.)?

Through conservation of habitat (land acquisition) and habitat enhancement. Habitat enhancement to date has focused on riparian habitats and riparian corridors with associated wetlands and forest acres.

13. Where does your agency get climate change information? (Choose all that apply)

State Climatologist

National Wildlife Federation

USGS

USFWS

Intergovernmental Panel on Climate Change

14. What are the science and research needs for your agency in regards to climate change work?

uncertain

15. Is your agency working with other departments or agencies within your state on climate change or climate-related issues?

Not Sure

We have been communicating with the Oklahoma Climatological Survey on adaptation guidance, but this has not evolved into a set of priority research projects.

16. Is your agency involved in collaborative climate change projects with conservation partners (federal, state, NGO, academia, etc...)?

No

17. Is your agency working with the Landscape Conservation Cooperatives?

Frequently (participate in conference calls and attend meetings when possible)

18. Is your agency undertaking any education and outreach efforts on the impacts of climate change on natural resources within your state? (Choose all that apply)

None

19. What is the future direction of climate change planning/ implementation in your agency/state in the coming year?

Uncertain. The South-central Climate Change Research Center will be established this year at the University of Oklahoma. While this Center will work with partners over a broader region than just the state of Oklahoma, we expect that it will have the lead in climate change research in our state.

20. What are the challenges/barriers that are holding your agency back from doing climate change work? (Choose all that apply)

Lack of Time

Lack of Staff Expertise

Lack of Staff Interest

Lack of Political Support

21. What additional training or information could the AFWA Climate Change Committee or the regional associations provide that would be helpful for your agency to incorporate climate change into agency work?

No Response

22. Are there any additional highlights, accomplishments, new initiatives, or actions that you would like to share (that have not been articulated yet)?

Oregon

Name: Holly Michael

State Agency: Oregon Dept. of Fish and Wildlife

Contact Information: holly.b.michael@state.or.us

1. What state agency do you work for? What is your title?

Oregon Dept. of Fish and Wildlife Conservation

2. What regional association is your agency associated with? (Choose all that apply)

WAFWA

3. Does your agency have a position that is solely dedicated to climate change (either mitigation or adaptation)?

No

4. How does your agency fund climate change work? (Choose all that apply)

State Wildlife Grants

5. Is your agency updating their State Wildlife Action Plan for climate change?

In Process

6. If so, how is your agency updating their State Wildlife Action Plan for climate change? (Choose all that apply)

Included throughout the document

Not a stand-alone chapter, but adding it as the 7th Key Conservation Issue, as well as throughout the document.

7. Is your agency updating other management plans for climate change?

Yes

All species, habitat, recovery, and wildlife area plans now require climate to be addressed, or at least identified for future considerations.

8. Does your agency plan on using the National Fish, Wildlife, and Plants Climate Adaptation Strategy as a reference in the next State Wildlife Action Plan revision or other management plan revisions?

9. Does your state have a State Climate Adaptation Plan?

Completed

Yes, ODFW was involved, as co-lead for natural resources, but the document spans all agencies, including health, economic, transportation, and many others.

10. Is your agency pursuing any vulnerability assessments?

Underway

11. If the answer is yes, what process was used? (Choose all that apply)

Basic research on salmonids in coldwater systems.

12. How is your agency addressing climate change impacts and climate-related impacts on the ground (i.e. reducing stressors, restoration, land acquisition, etc.)?

No Response

13. Where does your agency get climate change information? (Choose all that apply)

Within Your Agency

Other State Agencies

Academic Institutions

USGS

NOAA

Western Governors' Association Climate Workgroup

14. What are the science and research needs for your agency in regards to climate change work?

short-term as well as long-term on the ground management related research on hydrology, changes in vegetative communities, local scale precipitation changes

15. Is your agency working with other departments or agencies within your state on climate change or climate-related issues?

Yes

Lots of ways. Member of USGS PNWCSC Ex. Stakeholder Committee

16. Is your agency involved in collaborative climate change projects with conservation partners (federal, state, NGO, academia, etc...)?

Yes

Mapping of potential climate impacts on vegetation.

17. Is your agency working with the Landscape Conservation Cooperatives?

Not at this time

18. Is your agency undertaking any education and outreach efforts on the impacts of climate change on natural resources within your state? (Choose all that apply)

None

19. What is the future direction of climate change planning/ implementation in your agency/state in the coming year?

Not determined. Will be minimal until state and federal budgets improve.

20. What are the challenges/barriers that are holding your agency back from doing climate change work? (Choose all that apply)

Lack of Funding

Lack of Time

Lack of Staff Expertise

Lack of Staff Interest

Lack of Political Support

Lack of Climate Data

Lack of Biological Data

21. What additional training or information could the AFWA Climate Change Committee or the regional associations provide that would be helpful for your agency to incorporate climate change into agency work?

Need funding for States and research agencies. Not training or information - there's plenty of that already being provided by many others.

22. Are there any additional highlights, accomplishments, new initiatives, or actions that you would like to share (that have not been articulated yet)? no

South Dakota

Name: Tom Kirschenmann
State Agency: South Dakota Department of Game, Fish and Parks
Contact Information: tom.kirschenmann@state.sd.us
1. What state agency do you work for? What is your title?
South Dakota
2. What regional association is your agency associated with? (Choose all that apply)
MAFWA
WAFWA
3. Does your agency have a position that is solely dedicated to climate change (either mitigation or adaptation)?
No
4. How does your agency fund climate change work? (Choose all that apply)
State Wildlife Grants
State License Dollars
5. Is your agency updating their State Wildlife Action Plan for climate change?
In Process
6. If so, how is your agency updating their State Wildlife Action Plan for climate change (Choose all that apply)
Included throughout the document
Working "in house"
Contracting it out
7. Is your agency updating other management plans for climate change?
Not Sure

8. Does your agency plan on using the National Fish, Wildlife, and Plants Climate Adaptation Strategy as a reference in the next State Wildlife Action Plan revision or other management plan revisions?

Not Sure; have not read it yet/ waiting for the final version

9. Does your state have a State Climate Adaptation Plan?

No

10. Is your agency pursuing any vulnerability assessments?

In planning process

11. If the answer is yes, what process was used? (Choose all that apply)

NatureServe Vulnerability Index

expertise at South Dakota State University

12. How is your agency addressing climate change impacts and climate-related impacts on the ground (i.e. reducing stressors, restoration, land acquisition, etc.)?

WAP revision in progress; I don't know of any other agency effort that currently incorporates climate change

13. Where does your agency get climate change information? (Choose all that apply)

Academic Institutions

NatureServe

14. What are the science and research needs for your agency in regards to climate change work?

accurate downscaled models for terrestrial and aquatic ecosystems

15. Is your agency working with other departments or agencies within your state on climate change or climate-related issues?

Not Sure

16. Is your agency involved in collaborative climate change projects with conservation partners (federal, state, NGO, academia, etc...)?

No

17. Is your agency working with the Landscape Conservation Cooperatives?

Minimally

18. Is your agency undertaking any education and outreach efforts on the impacts of climate change on natural resources within your state? (Choose all that apply)

General Public

Conservation Partners

will be part of our WAP revision public involvements, but not a primary emphasis

19. What is the future direction of climate change planning/ implementation in your agency/state in the coming year?

once the WAP revision is complete and accepted, it will up to agency upper-level management to decide how and when to implement any recommendations

20. What are the challenges/barriers that are holding your agency back from doing climate change work? (Choose all that apply)

Lack of Time

Lack of Staff Expertise

Lack of Staff Interest

21. What additional training or information could the AFWA Climate Change Committee or the regional associations provide that would be helpful for your agency to incorporate climate change into agency work?

interactions with upper-level administrators to demonstrate why proactive strategies are useful; share success stories from other states at a director-to-director level

22. Are there any additional highlights, accomplishments, new initiatives, or actions that you would like to share (that have not been articulated yet)?

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ıvaa	•

Name: Wendy Connally

State Agency: Texas Parks and Wildlife Department

Contact Information: wendy.connally@tpwd.state.tx.us

1. What state agency do you work for? What is your title?

Texas Parks and Wildlife Department

2. What regional association is your agency associated with? (Choose all that apply)

SEAFWA

WAFWA

3. Does your agency have a position that is solely dedicated to climate change (either mitigation or adaptation)?

No

4. How does your agency fund climate change work? (Choose all that apply)

State Wildlife Grants

General Funds

5. Is your agency updating their State Wildlife Action Plan for climate change?

In Process

6. If so, how is your agency updating their State Wildlife Action Plan for climate change? (Choose all that apply)

Stand Alone Document

Working "in house"

7. Is your agency updating other management plans for climate change?

Not Sure

Seagrass Conservation Plan maybe

8. Does your agency plan on using the National Fish, Wildlife, and Plants Climate Adaptation Strategy as a reference in the next State Wildlife Action Plan revision or other management plan revisions?				
Yes				
9. Does your state have a State Climate Adaptation Plan?				
No				
10. Is your agency pursuing any vulnerability assessments?				
No (Go to #12)				
11. If the answer is yes, what process was used? (Choose all that apply)				
12. How is your agency addressing climate change impacts and climate-related impacts on the ground (i.e. reducing stressors, restoration, land acquisition, etc.)?				
Framing it in the context of what we already successfully do - habitat restoration and connection conservation easements, species resiliency				
13. Where does your agency get climate change information? (Choose all that apply)				
Within Your Agency				
Other State Agencies				
Academic Institutions				
Peer Reviewed Journals				
The Nature Conservancy				
National Wildlife Federation				
NatureServe				
USGS				
USFWS				
NOAA				
Intergovernmental Panel on Climate Change				

14. What are the science and research needs for your agency in regards to climate change work?

Coalescing who is doing CC work in Texas, status of the information, identify the potentially most-affected habitats; doubt we will start with species vulnerability, but might start with habitat vulnerability then work to finer scales if needed, especially down-scaled climate models. Also in need of staff expertise in related fields to down-scaled models.

15. Is your agency working with other departments or agencies within your state on climate change or climate-related issues?

Yes

Water planning (50 year planning horizon) with the Texas Water Development Board.

16. Is your agency involved in collaborative climate change projects with conservation partners (federal, state, NGO, academia, etc...)?

No

17. Is your agency working with the Landscape Conservation Cooperatives?

Actively (actively participating and/or fill a leadership role)

18. Is your agency undertaking any education and outreach efforts on the impacts of climate change on natural resources within your state? (Choose all that apply)

None

19. What is the future direction of climate change planning/ implementation in your agency/state in the coming year?

NA in the next year, maybe next two years; no \$, staff or real supportive interest at the agency level

20. What are the challenges/barriers that are holding your agency back from doing climate change work? (Choose all that apply)

Lack of Funding

Lack of Time

Lack of Staff Expertise

21. What additional training or information could the AFWA Climate Change Committee or the regional associations provide that would be helpful for your agency to incorporate climate change into agency work?

Expertise, find the right partners to collaborate, facilitate habitat vulnerability analyses

22. Are there any additional highlights, accomplishments, new initiatives, or actions that you would like to share (that have not been articulated yet)?

Utah

Name: Michael Canning

State Agency: Utah Division of Wildlife Resources

Contact Information: mikecanning@utah.gov

1. What state agency do you work for? What is your title?

Utah Division of Wildlife Resources

2. What regional association is your agency associated with? (Choose all that apply)

WAFWA

3. Does your agency have a position that is solely dedicated to climate change (either mitigation or adaptation)?

No

4. How does your agency fund climate change work? (Choose all that apply)

We don't do anything specifically identifiable as CC work. Much of what we do is relevant to adaptation, but we never try to associate it with CC. That would be unhelpful and unwise at this time.

5. Is your agency updating their State Wildlife Action Plan for climate change?

Not Started (Go to #7)

6. If so, how is your agency updating their State Wildlife Action Plan for climate change? (Choose all that apply)

We're just not sure if we'll go there, let alone how we might go about it. Probably, it won't be worth doing, because we'd just have to excise all such language upon final review.

7. Is your agency updating other management plans for climate change?

Not Sure

I doubt it but there are many work units and many plans. Most of them have little or no direct connection to SWAP.

8. Does your agency plan on using the National Fish, Wildlife, and Plants Climate Adaptation Strategy as a reference in the next State Wildlife Action Plan revision or other management plan revisions?

Not Sure; have not read it yet/ waiting for the final version

9. Does your state have a State Climate Adaptation Plan?

No

10. Is your agency pursuing any vulnerability assessments?

In planning process

11. If the answer is yes, what process was used? (Choose all that apply)

NatureServe Vulnerability Index

Our answer to #10 is more like "we did some, and they didn't look very useful or relevant, so we stopped". We did that in a series of meetings with TNC, the state climatologist, several climatetalented academics in the state, and biologists from other agencies (BLM, USFS, USFWS, etc.). Results were just too coarse, uncertainties too high, applicability too low in the context of limited staff, money, time, and the political climate here. We chose to revert back to what we're already doing, and try to do that even better. See next answer.

12. How is your agency addressing climate change impacts and climate-related impacts on the ground (i.e. reducing stressors, restoration, land acquisition, etc.)?

We do a tremendous amount of work with species and habitats that has the practical effect of reducing stressors and presumably enhancing resistance or resilience to CC. We just don't try to link it with CC. If CC ever stops being absolutely radioactive here, maybe we'll change our communication approach.

13. Where does your agency get climate change information? (Choose all that apply)

State Climatologist

Other State Agencies

Academic Institutions

The Nature Conservancy

NOAA

United States Global Change Research Program

Still waiting to see what the LCCs and CSCs are actually going to do. After all the talk, "crickets".

14. What are the science and research needs for your agency in regards to climate change work?

It would be premature and irrelevant to discuss these in the absence of political support.

15. Is your agency working with other departments or agencies within your state on climate change or climate-related issues?

No

See text box, question 11. We started to, in a very limited and low-profile way.

16. Is your agency involved in collaborative climate change projects with conservation partners (federal, state, NGO, academia, etc...)?

Yes

Very minimally. The largest would be TNC's recently-renovated Dugout Ranch - UDWR is listed as a partner with that climate change research center. Our shared interest is in forecasting effects on habitats (mainly ungulate food).

17. Is your agency working with the Landscape Conservation Cooperatives?

Occasionally (read updates and stay up to date on activities)

See text box question 13. We'd be willing. Not much "there" there yet.

18. Is your agency undertaking any education and outreach efforts on the impacts of climate change on natural resources within your state? (Choose all that apply)

None

19. What is the future direction of climate change planning/ implementation in your agency/state in the coming year?

None

20. What are the challenges/barriers that are holding your agency back from doing climate change work? (Choose all that apply)

Lack of Funding

Lack of Time

Lack of Staff Expertise

Lack of Staff Interest

Lack of Political Support

Lack of Biological Data

Political support is the biggest lack. If instructions said "pick one" that would be it.

21. What additional training or information could the AFWA Climate Change Committee or the regional associations provide that would be helpful for your agency to incorporate climate change into agency work?

?

22. Are there any additional highlights, accomplishments, new initiatives, or actions that you would like to share (that have not been articulated yet)?

Washington

Name: Lynn Helbrecht

State Agency: Washington Department of Fish and Wildlife

Contact Information: Lynn.helbrecht@dfw.wa.gov

1. What state agency do you work for? What is your title?

Washington Department of Fish and Wildlife

2. What regional association is your agency associated with? (Choose all that apply)

WAFWA

3. Does your agency have a position that is solely dedicated to climate change (either mitigation or adaptation)?

Yes

One for adaptation.

4. How does your agency fund climate change work? (Choose all that apply)

General Funds

5. Is your agency updating their State Wildlife Action Plan for climate change?

In Process

6. If so, how is your agency updating their State Wildlife Action Plan for climate change? (Choose all that apply)

Working with partners

Working "in house"

7. Is your agency updating other management plans for climate change?

Yes

Aquatic Habitat Restoration Guidelines

8. Does your agency plan on using the National Fish, Wildlife, and Plants Climate Adaptation Strategy as a reference in the next State Wildlife Action Plan revision or other management plan revisions?

Yes

9. Does vour state nave a State Chinate Adabtation Plat	State Climate Adaptation Plan?	State	have a	vour state	. Does	9.
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In Process

WDFW is on the steering committee. The Department of Ecology is in the lead.

10. Is your agency pursuing any vulnerability assessments?

Underway

11. If the answer is yes, what process was used? (Choose all that apply)

Expert Panel

Self-Developed Framework or Index

12. How is your agency addressing climate change impacts and climate-related impacts on the ground (i.e. reducing stressors, restoration, land acquisition, etc.)?

We have identified five major functional areas that are especially vulnerable to climate change (acquisition, restoration, managing at risk species, hydraulic permits and hatchery management) and are exploring possible changes in each to better prepare for climate change. Our goal is to focus on the management questions that should be informed by climate change and make sure we have good information (i.e., appropriate science) to do so.

13. Where does your agency get climate change information? (Choose all that apply)

Academic Institutions

Peer Reviewed Journals

USGS

USFWS

USFS

NOAA

EPA

Intergovernmental Panel on Climate Change

CAKE (EcoAdapt) Climate Impacts Group (based at UW)

14. What are the science and research needs for your agency in regards to climate change work?

We are planning on the management questions identified for each of our priority areas will help drive our science and research needs. For example, we need access to future climate informed data, specific to watershed, for sizing culvert replacement.

15. Is your agency working with other departments or agencies within your state on climate change or climate-related issues?

Yes

We are working with the Department of Ecology on ocean acidification research, and also to prepare the state climate adaptation strategy. We are working with Department of Natural Resources in terms of identifying common conservation priorities for species and ecosystems, and Puget Sound Partnership on understanding how climate will affect marine waters and shorelines of Puget Sound.

16. Is your agency involved in collaborative climate change projects with conservation partners (federal, state, NGO, academia, etc...)?

Yes

Vulnerability assessments (UW, U of I, USGS, other state agencies, TNC, NWF). Identifying Climate Gradient Corridors (TNC, UW)

17. Is your agency working with the Landscape Conservation Cooperatives?

Actively (actively participating and/or fill a leadership role)

18. Is your agency undertaking any education and outreach efforts on the impacts of climate change on natural resources within your state? (Choose all that apply)

General Public

Hunters and Anglers

Staff

19. What is the future direction of climate change planning/ implementation in your agency/state in the coming year?

Continue to develop workshops and seminars to educate staff on climate impacts and adaptation response. Continue to develop adaptation planning for each of the five major functional areas mentioned previously.

20. What are the challenges/barriers that are holding your agency back from doing climate change work? (Choose all that apply)

Lack of Funding

Lack of Time

Lack of Staff Expertise

21. What additional training or information could the AFWA Climate Change Committee or the regional associations provide that would be helpful for your agency to incorporate climate change into agency work?

More opportunities that do not involve physical travel, for networking and engagement between other state fish and wildlife agencies actively working on climate change, focusing on information exchange, tool sharing, experiences learned, etc. The links to national projects and initiatives that Arpita sends out are very much appreciated and an important way to develop a broader community of fish and wildlife professionals up to speed on what is happening in climate change. Thank you!

22. Are there any additional highlights, accomplishments, new initiatives, or actions that you would like to share (that have not been articulated yet)?

We launched a web page on climate change earlier this year We have a monthly newsletter for all agency staff on climate change. We highlight initiatives within the agency, upcoming events, resources and climate science news. We held a manager's workshop to profile regional projects aimed at adaptation for fish and wildlife, and held small group sessions to identify agency functions most at risk from climate change.

Wyoming

Name: Glenn Pauly

State Agency: Wyoming Game and Fish Department

Contact Information: Glenn.Pauley@wgf.state.wy.us

1. What state agency do you work for? What is your title?

Wyoming Game and Fish Department

2. What regional association is your agency associated with? (Choose all that apply)

WAFWA

3. Does your agency have a position that is solely dedicated to climate change (either mitigation or adaptation)?

No

4. How does your agency fund climate change work? (Choose all that apply)

State Wildlife Grants

5. Is your agency updating their State Wildlife Action Plan for climate change?

Completed

6. If so, how is your agency updating their State Wildlife Action Plan for climate change? (Choose all that apply)

Stand-alone chapter

Included throughout the document

7. Is your agency updating other management plans for climate change?

No

8. Does your agency plan on using the National Fish, Wildlife, and Plants Climate Adaptation Strategy as a reference in the next State Wildlife Action Plan revision or other management plan revisions?

No

9. Does your state have a State Climate Adaptation Plan?

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10. Is your agency pursuing any vulnerability assessments?

No (Go to #12)

11. If the answer is yes, what process was used? (Choose all that apply)

No Response

12. How is your agency addressing climate change impacts and climate-related impacts on the ground (i.e. reducing stressors, restoration, land acquisition, etc.)?

Traditional conservation activities are being applied to climate change adaptation. Climate change has increased the urgency and altered priorities.

13. Where does your agency get climate change information? (Choose all that apply)

Within Your Agency

Other State Agencies

Academic Institutions

USGS

USFWS

NOAA

LCCs

14. What are the science and research needs for your agency in regards to climate change work?

Climate change effects on wildlife diseases and invasive species distributions.

15. Is your agency working with other departments or agencies within your state on climate change or climate-related issues?

No

16. Is your agency involved in collaborative climate change projects with conservation partners (federal, state, NGO, academia, etc...)?

Yes

Working with University and Nature Conservancy to investigate the relationship between energy development, housing development, invasive species, and climate change to identify high priority wildlife habitat.

17. Is your agency working with the Landscape Conservation Cooperatives?

Frequently (participate in conference calls and attend meetings when possible)

18. Is your agency undertaking any education and outreach efforts on the impacts of climate change on natural resources within your state? (Choose all that apply)

Staff

19. What is the future direction of climate change planning/ implementation in your agency/state in the coming year?

Disseminate new information as it becomes available to be incorporated into management decisions and planning.

20. What are the challenges/barriers that are holding your agency back from doing climate change work? (Choose all that apply)

Lack of Funding

Lack of Time

Lack of Political Support

21. What additional training or information could the AFWA Climate Change Committee or the regional associations provide that would be helpful for your agency to incorporate climate change into agency work?

I think state agencies are more limited by financial and political support in addressing climate change as opposed to knowledge and training.

22. Are there any additional highlights, accomplishments, new initiatives, or actions that you would like to share (that have not been articulated yet)?